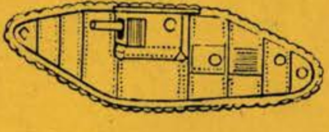
ARMORED CAVALRY JOURNAL

F. B. Sandidge



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Armored Cavalry Journal

Published Bimonthly by The U. S. Armored Cavalry Association

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Publication date: January 25, 1948. Deadline date, next issue: February 15, 1948.

THE ARMORED CAVALRY JOURNAL IS NOT RESPONSIBLE FOR OPINIONS EXPRESSED IN PUBLISHED CONTRIBUTIONS

Publication offices: 1406 East Franklin Street, Richmond, Virginia. Editorial offices: 1719 K Street, Northwest, Washington 6, D. C. Copyright, 1948, by the U. S. Armored Cavalry Association. Entered as second class matter at Richmond, Virginia, under the act of March 3, 1879, for mailing at special rate of postage in Section 412, Act of October 3, 1917. Terms: Domestic subscriptions, individual and organization (military or civilian), $3.00 per year. Foreign $3.50 per year. Canada: including War Exchange Tax, $3.50. All subscriptions payable in advance. Single copies, 75c. Extra copies to subscribers, 50c. The ARMORED CAVALRY JOURNAL *does not* carry paid advertisements.

CARDED

ARMOR IN THE

2d Armored Division in the Ardennes Counteroffensive

by Lieutenant Colonel E. A. Trahan★

PART I: The German Offensive

Colonel Trahan, G-2 of The Ground General School, tells the complete story of the 2d Armored Division's part in the Ardennes Counteroffensive in this two-part series. This series is probably the best and most complete yet published on Armor in the Bulge.

ON a day in the early winter of 1944, in the Caserne which lies just five miles south of the city of Krefeld, Germany, Von Rundstedt and his staff assembled to review the plans for the Ardennes Counteroffensive. An air almost of desperation must have hung heavily over the conference, for on the outcome of this venture depended the fate of Germany.

This regardless of the fact that Von Rundstedt, the commander of the German forces in the west, may himself have disapproved of the attempt. It must succeed. If it did, the Allied drive would be seriously impeded, perhaps stopped for a long period. Germany would be able to catch her breath and pull up her socks. Time would be gained in which she could perfect and make felt the full weight of her "secret" vengeance weapons. Jet planes would rise in swarms from her underground factories to rake the German sky clear of Allied bombers. Her army could be rebuilt and wage again its forte, a war of movement. In short, Germany still might win the war, or at least so prolong it that the Allies would gladly consent to favorable peace terms.

If the counteroffensive failed, however, then the war was lost for Germany. For the cream of units, men, supplies and equipment had been allotted to the attacking armies. The entire German front had been stripped, in order that the Fifth and Sixth Panzer Armies, and their support, the Seventh Army and the Luftwaffe, might lack nothing which could in any way contribute to success. With this military wealth spent in a fruitless effort, the German high command could not possibly hope to stem the Allied juggernaut that had rolled steadily from Normandy to the Siegfried Line. And, now, plans had reached a point from which there was no turning back. The die was cast.

In broad outline, the plan was simple. With his two powerful, well equipped and thoroughly trained Panzer armies, the Fifth and Sixth, Von Rundstedt would strike the eastern fringe of the Ardennes, a part of the Allied line that he knew to be thinly held. Surprised and overrun by the powerful mass of armor, the enemy could hope to offer little resistance. Through this breach in

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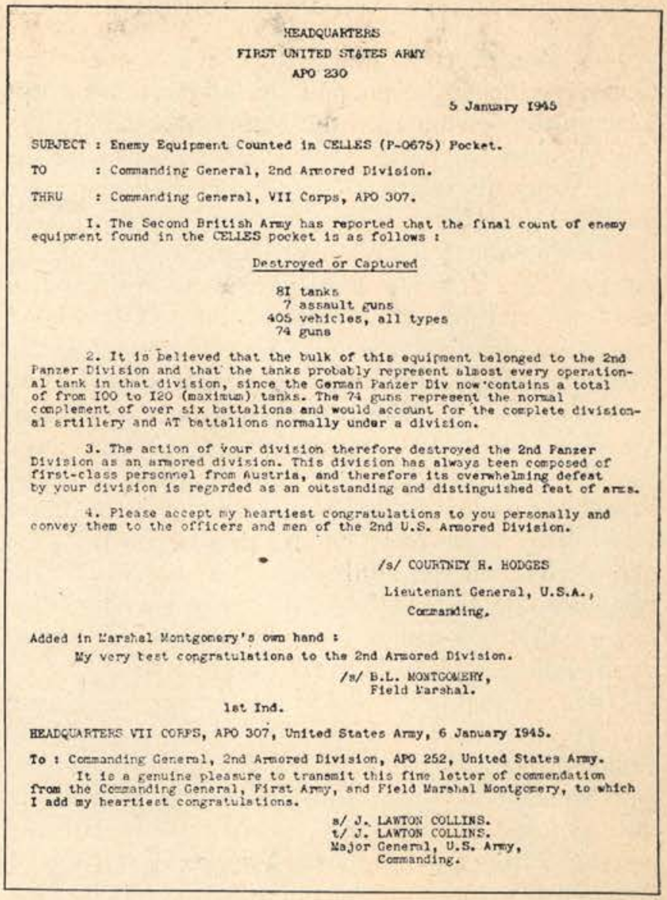
★Staff, The Ground General School.

BULGE

the Allied line the German armies would roll, moving swiftly through a bridgehead over the historic Meuse, then, lancing north, engulf Brussels and finally Antwerp, on the coast. With the Allied front thus neatly sliced in half, the German Army could turn and destroy the northern part of the Allied line, isolated and with its back to the sea. Subsequent possibilities were limitless and bright with promise.

As Von Rundstedt reviewed the plan, which not he, as is commonly supposed, but Field Marshal Walter Model had evolved almost in its entirety, many factors argued for its success. As an advance guard for the attack, there was Colonel Otto Skorzeny, onetime soldier of fortune and rescuer of Mussolini, and his 150th Brigade. Trained in extreme secrecy, partly equipped with American uniforms, tanks, vehicles and equipment, many of its members speaking fluent English, the Brigade would move ahead of the attack, some of its members dropping by parachute behind the American line, to seize and hold the bridgehead over the Meuse through which the charging armor would roll. This was their actual mission, although once their operation had started rumor ran rife, and it was even suspected that they might be the intended assassins of the Allied Supreme Commander. Such a belief, though unfounded in truth, gained credence from the very nature of the unit, violating in almost every respect, as it did, the rules of land warfare. But this pattern was carried even further, and a fifth column was instituted, disloyal Belgians being recruited to operate for the Germans behind the American lines, reporting the movements and plans of the Allied forces.

Behind this advance guard would come the Fifth and Sixth Panzer Armies, the shock troops of the offensive. Together, the two armies comprised 16 divisions, seven in the Fifth, commanded by Manteuffel, and nine in the Sixth, commanded by the notorious and fanatical, though professionally incompetent, Sepp Dietrich. Seven of these were Panzer divisions, and of these, four, all in the Sixth Army, were SS divisions, the elite of the German Army. The two armies, as well as their supporting troops, had been assembled and trained under a veil of secrecy and security more complete and effective than in any operation before or since. No detail had been overlooked to insure that intelligence of the projected operation did not reach the Allies. Even when the divisions were moved forward, they were disposed in a manner which suggested their use as reinforcement for the line or for counterattack against Allied offensives, rather than their employment in an attack.



HEADQUARTERS
FIRST UNITED STATES ARMY
APO 230

5 January 1945

SUBJECT : Enemy Equipment Counted in CELLES (P-0675) Pocket.

TO : Commanding General, 2nd Armored Division.

THRU : Commanding General, VII Corps, APO 307.

I. The Second British Army has reported that the final count of enemy equipment found in the CELLES pocket is as follows :

Destroyed or Captured

81 tanks
7 assault guns
405 vehicles, all types
74 guns

2. It is believed that the bulk of this equipment belonged to the 2nd Panzer Division and that the tanks probably represent almost every operational tank in that division, since the German Panzer Div now contains a total of from 100 to 120 (maximum) tanks. The 74 guns represent the normal complement of over six battalions and would account for the complete divisional artillery and AT battalions normally under a division.

3. The action of your division therefore destroyed the 2nd Panzer Division as an armored division. This division has always been composed of first-class personnel from Austria, and therefore its overwhelming defeat by your division is regarded as an outstanding and distinguished feat of arms.

4. Please accept my heartiest congratulations to you personally and convey them to the officers and men of the 2nd U.S. Armored Division.

/s/ COURTNEY H. HODGES
Lieutenant General, U.S.A.,
Commanding.

Added in Marshal Montgomery's own hand :
My very best congratulations to the 2nd Armored Division.

/s/ B.L. MONTGOMERY,
Field Marshal.

1st Ind.

HEADQUARTERS VII CORPS, APO 307, United States Army, 6 January 1945.

To : Commanding General, 2nd Armored Division, APO 252, United States Army.

It is a genuine pleasure to transmit this fine letter of commendation from the Commanding General, First Army, and Field Marshal Montgomery, to which I add my heartiest congratulations.

s/ J. LAWTON COLLINS.
t/ J. LAWTON COLLINS.
Major General, U.S. Army,
Commanding.

The German Attack

As a result, the attack on December 16, 1944, came with shocking suddenness. For the first time since Tunisia, American prisoners were taken in appreciable numbers. German armor lanced through the thinly held American sector in the Ardennes and drove westward with increasing momentum. Bastogne was surrounded and bypassed, the line of the Meuse threatened. In Germany, morale zoomed. This was more like the old days. The counteroffensive was succeeding beyond all expectations, and the German army was again advancing, with high hopes of a completely victorious campaign.

By December 22, two clouds only marred the bright horizon of German hopes. The first was the fact that no bridgehead yet existed over the Meuse. In this Skorzeny's 150th Brigade had utterly failed. His men, although in American vehicles and uniforms, speaking English, were still not quite authentic enough to escape being picked up in the immediate tightening of security which the attack caused. In addition, the personnel who were to be dropped by parachute were scattered, due mainly to faulty navigation by the pilots of the planes which carried them. In the end, the remnants of the Brigade were reduced to fighting in the line with the advancing armies.

The second jarring note was the failure to take Bastogne. Although it was surrounded and contained, and the advance still flowed around it, Bastogne was an important road and rail center, in the heart of the salient, and vital to the sustained drive of the offensive. Its heroic defense was a thorn, of no mean proportions, in the German side.

The effect of Von Rundstedt's attack on the Allied armies was immediate and positive. Within hours troops were on the move toward the battle. Boundaries were shifted, units redeployed, rear areas organized for defense. Gradually the shoulders of the penetration were stabilized. But still the German armies poured through the breach, around the island of Bastogne, and out into the area east of the Meuse, where exact positions were unknown, and the air was tense with expectancy. Here was the sensitive point of the attack. If the line of the Meuse could be held while the salient was pinched by a simultaneous advance from both north and south, Von Rundstedt's offensive would fail, and in fact would face the prospect of being caught in a pocket as the shoulders moved in behind him. To that end, the Third U. S. Army began preparations for an attack from the south, while, on the north, the U. S. Seventh Corps was ordered by First U. S. Army to assemble out of contact for an attack to the south, the line of the Meuse meanwhile being held by British units.

Units assigned to the VII Corps for this attack were the 75th and the 84th Infantry Divisions and the 2d Armored Division. Of these, the 2d Armored and the 84th were from Ninth Army, while the 75th was a new unit, just then arriving from Normandy. It is the purpose of this article to trace the actions of the 2d Armored Division from the time just prior to its commitment in the Ardennes Counteroffensive to the end of the battle, in order to give an example of the operation of American armor in the historic struggle. For armor, in this battle, was subjected to one of its severest tests. Operating under almost impossible conditions, in snow, ice and sleet, through rough, heavily wooded terrain, over roads covered with ice and in weather that precluded air support in most instances, armor, working in close cooperation and coordination with infantry and other arms, contributed heavily to the successful elimination of the German threat; in spite of the fact that armor is by its very nature extremely sensitive to terrain and weather.

When Von Rundstedt launched his counteroffensive on December 16, the 2d Armored Division had completed a bitterly fought drive from the Siegfried Line to the Roer River, and was holding a defensive line along the banks of that stream. Preparations were being made for an attack across the river and on to the Rhine. The weather was bitterly cold, and although no snow had fallen as yet, a penetrating, continuous rain had turned the flat, open plain bordering the river into a quagmire which made movement off roads almost an impossibility. The tanks were dug in along the available commanding terrain bordering the river, and in exposed positions, as they almost all were, the crews could leave the protection of their armor only under the cover of darkness.

The infantry fared even worse, in foxholes half-filled with mud and water, which they dared not leave except when necessary to their mission. At night, the tanks were pulled back, to avoid being ambushed by "bazooka patrols" which the Germans sent across the river, and for maintenance and rest. Just before daybreak, they again moved into their prepared positions. At night, also, hot food and ammunition were brought up for the infantry, and necessary reliefs of units and personnel were accomplished.

To this depressing routine, which was in its third week when the German counteroffensive started, was added a growing realization of the probable cost of the projected attack across the Roer. Intelligence revealed a steady buildup of enemy forces on the east bank of the river. By the second week in December, it was known that the bulk of the Sixth SS Panzer Army was in the area which centered between the Roer River and Cologne. One division of that army, the 12th SS, was in fact bivouacked in the Hambach Forest, which lay just across the river from the 2d Armored's sector. Its position, as well as that of the rest of the army, was ideally suited to counter any offensive launched across the Roer. Additionally, several divisions which later appeared with the German Fifth Panzer Army in the counteroffensive were known to be out of contact and in reserve behind the German line.

Faced with this formidable array of power, the Division plans for the coming attack were drawn up with even more than the usual exactitude and care. That the German divisions could be used in a counteroffensive was a possibility, but the sensitive spot so far as the Division was concerned was the north flank. The XIX Corps, of which the Division was a part, held a sector between the Wurm River to the west and Roer River to the east. These rivers had their confluence some miles to the north, and on the east bank of the Wurm, in the peninsula thus formed, lay the Siegfried Line, with Aachen as an anchor near the southern boundary of the Corps sector. Thus the enemy could thrust south along the east bank of the Wurm with his right flank protected by that stream, pinch off the salient held by the XIX Corps, retake Aachen, reoccupy the Siegfried Line, and threaten the entire Ninth Army.

Move To The Ardennes

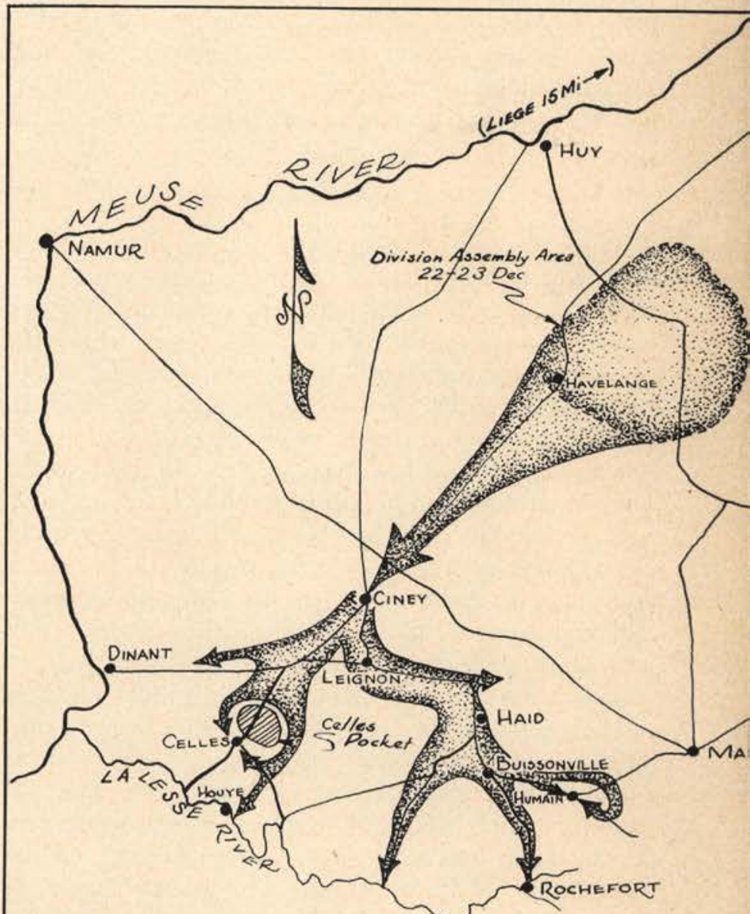
This threat was the immediate concern of the Division when the counteroffensive was launched on December 16. Intensive measures were taken to guard against parachutists and saboteurs, a task force was kept on the alert within the Division area, and a tank company was sent to augment the armored reserve at the Corps Headquarters. On December 20 the Division was relieved of its defensive sector, assembled in the area east of the Wurm River, and placed in Ninth Army reserve. That night one combat command, CCA, was moved to the west bank of the Wurm, where it would be more favorably placed to counter any drive by the Germans from the north.

The planned attack across the Roer River had of course been postponed as soon as the seriousness of the German offensive was apparent, and as it developed the Division made preparations for a possible move to the south. These preparations were not unwarranted, for during the afternoon of December 21 an order was received transferring the Division to the First Army, which was on the north flank of Von Rundstedt's penetration. This order was quickly followed by another, at about eight o'clock that night, directing the Division to move immediately to an assembly area in the vicinity of Huy, Belgium, just northwest of the point that the enemy attack had then reached, and prepare to counterattack to the south or southeast. By 11 o'clock the same night, just three hours after the order had been received, the leading elements of the Division were on the road and moving toward the battle.

The move was made under the most adverse conditions imaginable. No previous indication of the exact location of the Division assembly area had been available, and therefore no advance route reconnaissance was possible. In addition, the convoys moved under complete blackout restrictions, over narrow roads treacherous with ice and mud and clogged with traffic. The route lay through Aachen, now a heap of rubble due to the resistance put up by the Germans prior to its capture, thence south and west through hilly, wooded country, past Liege and the buzz bombs overhead, and into the assembly area which lay in the bend of the Meuse at Namur, just 10 miles south of the town of Huy. The Division moved in two columns, and by dark of the 22d was completely closed in its new area. The march had covered 70 miles, and despite the difficult conditions, had been without incident, except for several mishaps to vehicles due to slipping off the road on iced turns and grades. To understand this accomplishment it is necessary to consider the size and bulk of the unit. The Division was one of the two remaining American armored divisions still organized under the old tables of organization, which were heavier in personnel and equipment than the new, and so with its attachments consisted of over 14,000 men and approximately 3,000 vehicles, of which over 450 were tanks, tank destroyers and self-propelled artillery pieces. To move this mass of men and equipment quickly is difficult under even the best conditions, and under the conditions of the march into Belgium it required a monumental effort on the part of every individual in the division.

When the Division closed in its assembly area late on December 22, the point of the enemy advance was just 20 miles from the Meuse, and about the same distance southeast of the Division command post, set up in a château near Havelange. The German Sixth Panzer Army, in the northern sector of the offensive, had suffered several setbacks in its timetable to the Meuse, and was even then fighting to break through the stubborn northern shoulder of the bulge in the vicinity of Malmedy, scene of the infamous massacre of American troops earlier in the battle. The Fifth Panzer Army, in the southern sector, had met with more success, although it had failed to take Bastogne. The town was surrounded by the 26th Volksgrenadier Division, which had orders to take it while the Panzer Lehr and the 2d Panzer Divisions raced by on the south and north on their way to the Meuse. The northern of these two divisions, the 2d Panzer, now found itself the spearhead of the offensive, having outstripped all of the other German units in the Bulge. Moving parallel to the Sixth Panzer Army and just south of it, the 2d Panzer avoided the pitched battle in which the northern army was engaged in the vicinity of Hotton and Marche. Once clear of this area, it would be able to turn north and race for the Meuse between Namur and Dinant, or perhaps force a crossing further north.

These facts, unfortunately, were unknown to the 2d Armored Division as it moved into its assembly area. Exact positions of even friendly troops were sometimes unknown, and this was true to a greater extent of the locations of German units in the area of the penetration. The fight then going on to the east, where the Sixth Panzer Army was attempting to push north, had of course been reported, but the proximity of the 2d Panzer Division and its threat to the Meuse and to the assembling VII Corps had not. This was due primarily to the weather, which was so overcast that it precluded all aerial reconnaissance. It was not until two days later that the weather cleared sufficiently to allow either the artillery observation planes or the Air Corps to take to the air.



Under these uncertain conditions, the first move of the Division, once it had closed in its area, was to secure that area from possible enemy action, and to contact friendly units to the front and flanks. Both combat commands, the reconnaissance battalion, and the engineer battalion were therefore ordered to send out patrols to the south, east and west, each in their respective sectors. These patrols had orders to probe their assigned areas for possible enemy movement to the north or west, and to establish contact with friendly units which might be in these areas. All patrols were assigned limiting lines to insure that the presence of the Division in the area would not be compromised, insofar as this was consistent with the safety of the unit from surprise. In addition, all of the Division units set up and manned road blocks on all roads in the area.

Behind this screen of reconnaissance and road blocks, the Division staff began planning for the VII Corps attack. Even at this early date, the morning of December 23, plans for the attack had to be changed somewhat, due to the fact that one of the divisions of the corps was already in contact. The Sixth Panzer Army, in its headlong race, had run into the 3d Armored Division, also part of the First U.S. Army, in the vicinity of Hotton. Unable to penetrate in this area, it had slipped south, then resumed its march to the west, directly into the assembly area of the 84th Infantry Division in the vicinity of Marche. The 84th, therefore, was engaged in a pitched battle on December 23 to defend its area from the advancing enemy. It was hoped, however, that the attack could still be made, and plans therefore went forward during the morning.

COMMITMENT

These plans were brought to a dramatic halt at 12:30 P.M., when a lieutenant from the reconnaissance battalion of the division arrived at the command post in a jeep. He was brought into the war room, where the commanding general and his staff were engaged in outlining plans for the Division attack, and there reported that he had been in command of one of the reconnaissance patrols which had been sent to the south of the Division area. When his patrol reached Haid, at 11:30 A.M., he announced, it had been fired on by a group of enemy vehicles which included two Mark IV tanks, and one of his armored cars had been hit and destroyed. Although the crew had escaped, identification was still possible through the markings on the vehicle. A quick glance at the map placed Haid just 10 miles south of the Division assembly area. The inference was obvious. The German spearhead, sideslipping the fight at Marche, had turned north again and was once more on its way to the Meuse. The situation was extremely critical. Haid was only 12 miles from Dinant, on the Meuse, and 20 from Namur. The enemy spearhead was even then threatening the rear of the 84th Division, fighting near Marche, and any further northward movement would place it between the 2d Armored and the Meuse, and threaten the line of that river from Dinant north.

Although the Division had been under orders to assemble out of contact with the enemy, it was obvious that the enemy now knew that at least the reconnaissance elements of the Division were in the area. In addition, it was imperative that the gap between the Division and the Meuse be closed at once, and the enemy prevented from advancing further north. The decision was not long in coming. Combat Command A was ordered to move at once to Ciney, four miles northwest of Haid and squarely in the middle of the gap between the 84th Division and the Meuse, to secure Ciney and clear the area south of the town of enemy. But this was not enough. Contact had been made at 11:30 A.M., and it was now after 1 P.M. In that short time an aggressive enemy might have made his way through Ciney and the thin reconnaissance screen into the area in the bend of the Meuse. One of the medium tank companies from the armored regiment assigned to CCA was bivouacked in a patch of woods less than 100 yards from the command post. It had arrived the night before after the gruelling march from the Roer, and was now resting and reconditioning its vehicles and tanks, preparing for further action. But it could not realize how close that action was. A staff officer hurried from the château to the woods, and in less than 10 minutes a column of tanks and half tracks streamed out of the woods and down the road to Ciney, throttles wide open. CCA had been committed to action.

When the tanks reached Ciney, however, they found it clear of enemy. After the first contact at Haid, the German column was evidently proceeding slowly and with caution, for the distance from Haid to Ciney was only four miles, while that from the division command post to Ciney was 10. The tank company quickly outposted the southern edge of the town, and as the remainder of the combat command closed behind it, the town was occupied and the surrounding terrain organized for defense. This was a definite block in the path of the advancing enemy, for Ciney was the focus of the road net between Marche and the Meuse, and its denial to the enemy would at least hinder and perhaps block his march northward.

The occupation of Ciney, however, accomplished only part of CCA's mission. No contact had yet been made with the enemy, and it was possible that he was now marching on Dinant, hoping to cross the river at that point. An attack on Buissonville, which lay six miles southeast of Ciney, was therefore ordered. This would strike the Germans in the flank, if they were marching to the west; if they were still advancing north it would lead to a meeting engagement. In order to resolve the situation as quickly as possible, a night attack was ordered, and the task forces of the combat command began moving down the road to Buissonville at 8:30 P.M., just after dark. At the same time, other elements of the combat command protected Ciney and reconnoitered to Namur and Dinant, to guard against penetration in these areas. Very little snow had fallen, and as the weather had begun to lift in the afternoon, the night was clear and sharp with cold.

As the advance guard of the leading task force reached Leignon, about three miles from Ciney, it was fired on by an antitank gun and machine guns, marking the first enemy contact for the combat command. Support was quickly brought up, and the antitank gun and two enemy half tracks were destroyed by accurate fire, without loss to the task force. Leignon was occupied, and the advance resumed. The night had become very dark, and the advance was slow and cautious. In addition, some reorganization had been necessary after the skirmish at Leignon. As a result, the advance guard was still some distance from Haid at two o'clock on Christmas Eve morning. About 15 minutes later the leading elements reported noise and movement approaching on the road ahead. The column was halted and reconnaissance patrols quickly sent out. They returned in a short time and reported that a column of German vehicles and tanks was advancing slowly up the road. The enemy column had evidently halted after its contact with the reconnaissance patrol the previous morning, and was only now beginning to move again. It was evidently, also, not aware that American troops were ahead of it.

The commander of the CCA task force quickly saw the opportunity for something very rare in modern combat—an armored ambush, and as quickly seized it. Tanks, half tracks and the other vehicles of the task force immediately moved off the road to either side, taking up positions, as quietly as possible, which commanded the road, and leaving it deserted. The noise which this made was evidently not audible to the Germans in the noise of their own column, for they continued to move cautiously up the road, between the quiet and watchful ranks of tankers, machine gunners and riflemen.

As the leading vehicle reached the far end of the task force, a gun opened up. Immediately the scene was illuminated by gun flashes, tracers and shell bursts, as cannon, mortar, rifle and machine-gun fire poured an ever-increasing volume into the hopelessly enmeshed column from both sides of the road. In a short time a vehicle near the head of the column was afire. Then another blazed up, and in a very few minutes the road was bright with the blaze of burning vehicles. By this light the slaughter continued, the task force moving in as resistance decreased, until the entire column was destroyed except for scattered vehicles and enemy which escaped in the confusion of the fight. The losses in CCA were negligible, due to the element of surprise and the force of the attack. It was now after 4 A.M., and CCA coiled up near the road to reorganize and await daylight. At 8:30 A.M. the advance was resumed. Since contact was obviously again imminent, the combat command advanced in three columns, all moving close together, both on available roads and cross country. Haid was cleared at 9:15 A.M., and at 10:45 A.M. tank fire was received from the vicinity of Forzee, a small village a mile south of Haid. A fire fight ensued, and one enemy tank was knocked out, CCA suffering no losses. The attack was resumed at 1 P.M., and at 2:30 P.M., the combat command entered its objective, Buissonville. A task force swept the area northeast of the town and flushed out six tanks and several other vehicles, most of which were destroyed or captured. Buissonville itself was occupied and defensive positions prepared.

The occupation of Buissonville completed CCA's portion of the Division plan for the extension of the line Hotton-Marche, and it was to hold the town until further orders. Plans, however, were immediately made for an attack on Humain, an enemy strongpoint four miles to the southeast, since this would logically be the next objective if the attack was resumed.

It was known by this time that the enemy which CCA had defeated during its march to Buissonville belonged to the 2d Panzer Division, the spearhead of the German Fifth Panzer Army. It was an ironic twist of fate that the 2d Armored Division should be fighting its opposite number in the German Army. But not for the first time, however. The two units had met several times before, from the Normandy Beachhead on, and always with the same result. It remained to be seen whether this pattern would continue, under the conditions of the present engagement. Both were attacking, both a little removed from other supporting troops, both presumably in good condition, and both intent on the same objective—destroying the other and continuing the advance.

While this was going on, the remainder of the division had not been idle. On the 23d, CCB continued to maintain road blocks around the Division assembly area, and prepared for movement to the south, if this should be ordered. Early on the 24th, after CCA had cleared Ciney, CCB was ordered to secure the town, and relieve CCA elements there to rejoin their combat command. This CCB did with one of its task forces. Shortly thereafter, intelligence reported a buildup of enemy forces in the vicinity of Celles, and particularly in the woods east and north of the town. The enemy was again up to his old tricks. After the contact with CCA at Haid, he had evidently again sideslipped, at least with part of his force, and was once more headed north, this time within five miles of the Meuse. Why no attempt was made to cross the river in the vicinity of Dinant is not known, except for the fact that the German plans called for a crossing further north. Whatever the reason, it placed the spearhead of the enemy offensive squarely in the front of the 2d Armored.

Still under orders to secure the assembly area and prevent the enemy advance to the north, the Division commander ordered the 4th Cavalry Group, which had in the meantime been attached to the Division, to reconnoiter the gap between CCB and the river, establish contact with CCA to the southeast, and maintain contact between it and the 84th Division on the left. This was done, and resulted in several small actions in which several enemy vehicles were destroyed. In addition, the 4th Cavalry Group contacted the British 29th Armored Brigade on the right, in the vicinity of Dinant.

Thus at dark on Christmas Eve the Division held a line which stretched from the 84th Division, still engaged at Marche, all the way to the British on the Meuse at Dinant. The situation had cleared tremendously, for now at least there was no gap between the American forces and the Meuse, and although exact locations of the enemy were unknown, it was reasonably certain that his armored spearhead would continue to attack to the north, probably in the vicinity of Celles. This situation was known to higher headquarters, where the necessity of immediately stopping the enemy attack was also well realized. With the major offensive element of the proposed corps attack already partly committed, and with no immediate prospect of its relief from the line, it was also obvious that the projected operation could not be quickly carried out. These considerations were all weighed, and at 11 P.M. on Christmas Eve an order was dispatched directing an attack by the 2d Armored Division on Christmas Day. The way was now open to crush the German spearhead and stop the offensive.

Christmas Day dawned bright, cold and clear, a Christmas present of the second of four days of good flying weather that was to help spell the doom of the Ardennes Counteroffensive. The two major commands of the Division, CCA and CCB, being separated by over 10 miles, launched their attacks independently, both under orders to destroy the enemy to their front and to close to the line of the La Lesse River, which flowed into the Meuse from the vicinity of Rochefort, 10 miles to the southeast. The Division reserve took up position behind the combat commands to support them, until it was committed with CCA two days later. The Division attack lasted three days, and the dawn of the fourth saw the German hopes of victory in the Ardennes thwarted.

THE CCA ATTACK

CCA again attacked in darkness on Christmas morning, sending one troop of the 24th Cavalry Squadron, which had been attached to the command the day before, into Humain in an attempt to seize it in a quick thrust. However, at 7 A.M., a strong enemy force composed of tanks, infantry, and some artillery launched a counterattack from the southeast, and forced the troop to withdraw toward Buissonville. At 1 P.M. the troop made an attempt to retake the town, but was repulsed. At 4 P.M. the 24th Cavalry Squadron was reinforced by four platoons of tanks and one platoon of tank destroyers, and a third attack was made this time from the northeast and south. Resistance was determined and heavy, and the attack dragged on into darkness, when the attacking forces halted and consolidated their positions, extending around the town to the north, east and south and almost encircling it. During the night the Germans attempted to send a relieving column into the town, but were unsuccessful, losing several vehicles and a number of men in the attempt. From the prisoners taken, it was learned that they belonged to the 9th Panzer Division, ordered to go to the assistance of the 2d Panzer Division. It was learned later that the 130th Panzer Division had also been ordered to go to the assistance of the 2d Panzer, but arrived too late to do any good, either in this or the Celles area. The enemy plan of replenishing his fuel stocks from captured American dumps had not worked out successfully, and with fuel and other supplies running low, it was essential that the spearhead reach the Meuse immediately, or it would not be reached at all. Even now some tanks in the advance elements near Celles were out of gas and might have to be abandoned. In addition, the Allied Air Forces had seized on the favorable weather, and were pounding the German columns wherever they appeared in the area of the penetration. Things were beginning to look a little less bright for Hitler's hopes.

In the meantime, the remainder of CCA had launched two other attacks, at 9 A.M., with Rochefort and the high ground to the west as objectives. Both columns encountered strong enemy resistance, and at dark had advanced only about two miles.

During the day, the enemy had also launched several counterattacks against CCA in the vicinity of Buissonville, having by-passed partially encircled Humain to the east. These attacks were all repulsed with heavy loss to the enemy, and in one case a column of 14 enemy vehicles was trapped and completely destroyed. However, continued enemy attacks from the south were indicated, and the combat command was ordered to consolidate the line which it held, from Humain to the west, repulse any enemy attempts to move to the north, and to reorganize for a possible continuation of the attack on the 27th.

By the morning of the 26th the German elements which had filtered into the area north of Humain had been eliminated, and the combat command turned its attention to the south, bracing itself for the expected attacks. Nor was it disappointed. At 7:50 A.M., in the gray mist, a force of 15 tanks and a battalion of infantry threw itself against the CCA force, which consisted of a tank company, holding the village of Havrenne, a mile and a half below Buissonville. A bitter fight followed, the tankers using every gun in their arsenal against the enemy who continued to advance despite their heavy losses from the accurate American fire. The Germans pushed their attack to within 100 yards of the CCA position, and only then did the remnants begin to withdraw, leaving the field littered with tanks, vehicles and dead and wounded. Eight tanks, two half tracks, a self-propelled gun, and numerous dead were counted in the open fields across which the attack had been made. The CCA tank company suffered damage to two tanks and several men wounded.

Another attack was launched against the same force at 8:30 A.M., shortly after the first had been repulsed. This one however, was not pushed with the same determination as the first, possibly because of the mauling which the latter had received. As a result, when the leading three half tracks in the enemy force were destroyed by accurate tank fire, the attackers withdrew. At the same time, yet a third attack was launched, against the extreme right flank of the CCA position four miles southwest of Haid. It met the same fate as the other two, and ended the counterattacks against the CCA line on the 26th.

CAPTURE OF HUMAIN

During the following night, and after reorganization, plans were made for pushing the CCA attack to the line of the La Lesse River, and for the capture of Humain. For this latter task, the Division reserve was attached to the combat command, and moved during the night to join it. The two CCA columns to the west of Humain jumped off just after noon of the 27th, and, moving against scattered but determined resistance, reached their objectives, both along the La Lesse River from Rochefort west, at 6 P.M. A task force contacted CCB, operating in the area around Celles, and on the left the combat command closed around Rochefort, which was tenaciously defended. This resistance was overcome as darkness fell, and the enemy pulled back to the south bank of the river.

The attack on Humain, on the same day, was preceded by artillery fire on strong points in the town throughout the night, and a one-hour artillery preparation from 7 to 8 A.M. At 8 A.M. the attack jumped off, one tank company taking position on the west edge of town to assist by fire the attack of the remainder of the force. A task force of tanks and infantry was sent around the town and attacked from the south, while a battalion of infantry attacked from the north. The town was defended by a battalion of the 9th Panzer Division with some tanks and scattered detachments of the 2d Panzer in support. This force fought stubbornly, barricading themselves in houses and fighting until killed or forced to move to another house. As a result, very few prisoners were taken in the early part of the fight for the town. The artillery fire had provided abundant rubble that afforded the defenders cover and impeded the movement of the attacking tanks and infantry. The fight went on all day, with the enemy gradually giving ground, until just after dark the few remaining Germans were surrounded in a large, thick-walled stone château on the edge of town. Still they refused to surrender. Then a tank from the Fife and Forfar Yeomanry, a British squadron of flame throwing tanks which had been attached to the Division for some time, was brought up. Instead of attacking the château, it advanced into the open and threw its stream of flame into a large tree which stood in full view of the enemy defending the château. In minutes the tree was a pillar of fire, lighting up the surrounding buildings and the courtyard of the château. The spectacle had an immediate effect, for in a few minutes the last defenders of Humain filed out of the château, hands above their heads. Except for mopping up operations in rear areas, this action concluded CCA's mission, and it began organizing the line which it held, from southwest of Marche along the La Lesse River to a junction with CCB southeast of Celles.

THE CCB ATTACK

While CCA was thus fighting its way to the La Lesse River, CCB, on the right, was engaged in a similar attack, which was to end in the almost complete destruction of the enemy spearhead. This drive was aimed from the start at the large enemy buildup in the Celles area which intelligence reports had indicated. Jumping off from Ciney at 8 A.M. on Christmas Day, CCB advanced in two columns, one moving to the southeast of Celles, and one to the north, the object being to surround Celles and the woods to the north and east in which the German units were located. The north column advanced steadily against light resistance, and by 5 P.M. had reached its objective, the woods just northwest of Celles. The south column advanced quickly through the broken country east of Celles against similar resistance, then swung around to the west and then to the northwest, to reach the high ground southeast of Celles just as the northern force reached its objective. Then the two forces made a combined attack on Celles. Resistance was heavy, but by 5:45 the town was cleared and the two forces had joined, completing the encirclement of the numerous enemy trapped in the woods to the north and east.

Meanwhile, other elements of the combat command had been active to the north and south. Strong reconnaissance patrols had been sent out to the south in the morning, and had knocked out seven enemy vehicles attempting to advance north near the bridge over the La Lesse River southeast of Celles. These patrols continued to operate in the area between Celles and the La Lesse River, protecting the flank of the combat command and maintaining contact with CCA to the east, for the next three days. At noon the combat command artillery engaged an enemy column which had been discovered on the road north of Celles, and knocked out seven tanks and 10 other vehicles. The Division reconnaissance battalion, which had been attached to the combat command for the operation, and which was covering the north and west flanks of the attack, cleaned enemy pockets from two small towns north of Celles, capturing or destroying, in the process, 20 enemy vehicles and numerous personnel. This was one of the instances in which units of the Division encountered the German "Trojan Horse" ruse, for out of the 20 vehicles captured or destroyed, seven were American. Although the crews in this instance were in German uniform, extreme care was necessary to avoid firing on friendly units. This situation added considerably to the difficulty of the operation, since all vehicles were suspect until they were identified, even though they were recognized as American. The reconnaissance battalion also maintained contact with the British at Dinant. The British 29th Armored Brigade, part of the force holding the line of the west bank of the Meuse, had moved part of its tanks and troops to the east bank, and had established a command post in Dinant. This force rendered considerable assistance to CCB, in covering its open flank on the river as it advanced and providing supporting artillery fire.

THE CELLES POCKET

During the night of the 25th-26th the combat command reorganized, and at 9 A.M. on the 26th attacked to begin the reduction of the Celles pocket. Three task forces converged on the trapped Germans, and although resistance was heavy, especially in the northern portion of the encirclement, steady progress was made, and by nightfall only one small group of enemy remained, in a patch of woods just east of Celles. At 4:50 A.M. the next morning, the enemy force in this circle launched a counterattack in the darkness in an effort to escape. It was quickly repulsed, and 50 of the enemy were captured. Then, at 10 A.M., CCB launched its attack; progress was slow due to the stubborn enemy resistance and the heavy undergrowth, and it was not until 11:30 A.M. that the woods were clear, numerous additional prisoners and 80 vehicles, several of them American, being taken. The action throughout the reduction of the Celles pocket was characterized by the stubborn enemy resistance, evidenced by the small ratio of prisoners to killed, and by the slow progress on the part of CCB, imposed by the heavily wooded area. The initial attack on the 26th was preceded by an artillery preparation fired by all available artillery, including the British artillery east of the Meuse, for five minutes. Then the infantry advanced, supported by tanks firing canister. Each dug-in position had to be individually reduced, and each suspicious spot received its quota of fire. This method of operation was followed throughout the two days of the action, and helped to reduce the number of American casualties, these being extremely light compared to the number of enemy killed, wounded and taken prisoner. Although many of the German vehicles were by this time out of gasoline, and immovable, they were used wherever possible as stationary pillboxes, and normally formed the nucleus of a strong point. These were particularly troublesome, and were reduced only after bitter fighting.

Although the German troops in the pocket were hopelessly surrounded, the enemy continued his efforts to relieve them until the afternoon of the 26th. The enemy column attempting to cross the La Lesse River south of Celles, encountered by the Division reconnaissance patrol on the 25th, was one of these, with two more attempts on the 26th. The first of these latter was launched by a force of enemy infantry at 12:15 P.M., from the bridge over the La Lesse River southeast of Celles up the road towards the town. It pushed up a short distance, and then was crushed by fire from a tank battalion, and the enemy withdrew. Shortly thereafter, the second enemy attack was launched from the same spot as the first, this time by a powerful tank-infantry team. It was momentarily stopped by fire from the tank battalion and the combat command artillery, but collected itself and again began pushing towards Celles. The commander of the combat command knew that if the tanks accompanying the attack could be knocked out, the enemy would withdraw. Dive bombing was the answer, since the heavy Mark V and Mark VI tanks being used by the Germans were little affected by the fire of the American tanks. But the air support which the Division received during the action was intermittent, due to the distance that the fighters operated from their bases, and no planes were available at the time.

The British on the Meuse, however, had rocket firing Typhoons, which had in the past proven themselves extremely effective against tanks. The combat command commander therefore hurried to the British command post. The British were willing and anxious to cooperate, but another difficulty presented itself. The Division had no radio capable of communicating with the planes, to guide them in to the target. But the combat command artillery observation cubs were up, and intimately familiar with the location of the targets. Why not use one of them to guide the British planes in? Radio commands issued from both the British and the American command posts, and in a short time a squadron of Typhoons appeared, circling above a lone cub which dived on a number of tanks advancing up the road towards Celles. Then the cub turned towards its own lines, and the Typhoons screamed down, rockets lancing from their wing runners. In a short time seven German tanks were out, and the rest of the attacking force began to pull back, with the Division tanks and infantry pushing them hard. This attack ended all enemy attempts to relieve the trapped units at Celles, and all attempts to push to the north.

The afternoon of the 27th was spent in cleaning up the reduced pocket and the combat command rear areas, and collecting prisoners and wounded. Only part of the command was used in this task. The remainder pushed south again, launching an attack which took the high ground south of Celles and overlooking the La Lesse River, and closing to the river throughout the breadth of the combat command zone. Thus, at dark on December 27, the Division held a continuous line along the La Lesse, from Houye, where contact had been established with the British on the right, to some distance east of Rochefort. On this line the Division was ordered to halt, organize the ground, and await further orders.

RELIEF

Early on the 28th, the Division was relieved of its mission and ordered to assemble the bulk of its force in the area it had occupied on the 23d, its line to be turned over to the British, the 4th Cavalry Group and the 83d Infantry Division. The Division reconnaissance battalion and several companies of tanks remained in the area, patrolling the river and maintaining road blocks until the relieving units came up. During the next two days these units gradually moved into the Division assembly area as they were relieved, and by December 30 the Division was completely assembled. Plans were prepared and road blocks set up against the possibility of an enemy airborne attack or ground infiltration. All units were intensively occupied in maintenance, repairing the damage done during the five-day action. But there was still time for a well deserved rest, for the distribution of mail and Christmas packages, and for the long delayed Christmas dinner.

This leisure also gave time for contemplation of the division's accomplishments, for which recognition was not long in coming. The following are extracts from the comments on the action that appeared in the VII Corps Weekly Intelligence Review, December 31, 1944:

"From the beginning of the enemy's drive on December 16 he had forged ahead with varying degrees of speed . . . he moved west while shooting other columns northwest . . .

"Realizing he must not stop at any point, he continued with ever-increasing speed toward the west, hoping to reach the Meuse River and turn north toward Liege. By midnight of December 22 . . . strong patrols had reached Celles . . . reconnaissance elements were reported west of Celles and north of Ciney. He was well entrenched and strong in Rochefort.

". . . the attack of December 23 of Second Armored Division may well be remembered as having one of the most far reaching effects of any action of World War II, for the masterful execution of this attack by the 2d 'Hell on Wheels' Armored Division not only stopped the German 2d Panzer Division long before it could reach Namur, but annihilated a great part of it and forced the remnants to withdraw from Celles, Leignon, Buissonville, and Humain toward Rochefort, thus bringing to a halt the greatest sustained German counter drive against Allied troops on the Continent since D-Day.

"The meeting of the U.S. 2d Armored Division and the German 2d Panzer Division was a fitting comparison of the Allied and German armored might. Each was an able representative of the Armored Division of its army. For three days the engagement continued, involving hundreds of small battles. By December 25 the German onslaught began to falter, stopped and gradually withdrew, losing heavily in men and material. . . . It is estimated the Division (German 2d Panzer) strength just before this four-day period was approximately 8000 men and 100 tanks. . . ."

Additional recognition came in the form of the letter of commendation from the Commanding General, First U. S. Army, to which Marshal Montgomery added his congratulations, a copy of which is reproduced elsewhere in these pages.

Realization of the magnitude of its accomplishment grew as the Division made a preliminary count of the battlefields: 1200 prisoners taken; more than 550 enemy dead; 81 tanks, 167 trucks, 74 guns, 111 half tracks, seven self-propelled guns, and 154 other vehicles of all types captured or destroyed, 24 of these being American. This in contrast to the Division losses; 220 wounded and less than half that number killed. The loss to the Division in tanks and other vehicles was insignificant in comparison to the number captured.

These statistics attested the overwhelming defeat of the German spearhead by the Division. But even more they marked the end of German offensive power in the Bulge. As the Division rested it could look back on a job well begun, but not yet completed. For the salient still existed, and must be reduced. And so as the year ended, plans were being laid for this next operation.

Second Armored Division
Troop List December 23, 1944
Commanded by Major General Ernest N. Harmon

Artillery Commander—Col. C. I. Hutton
Chief of Staff—Col. C. S. Mansfield
AC of S G-1—Lt. Col. C. S. Hannum
AC of S G-2—Lt. Col. E. A. Trahan
AC of S G-3—Lt. Col. R. W. Jenna
AC of S G-4—Lt. Col. C. C. Petersen
Div Engr—Lt. Col. L. W. Correll
702d TD Bn—Lt. Col. J. A. Beall
195th AAA Bn—Lt. Col. D. R. Corum

Combat Command A—Commanded by Brigadier General John H. Collier

Task Force A Lt. Col. H. O'Farrell
- 3d Bn 66th AR (less Co 1)
- 1st Bn 335th Inf Regt
- 1 Plat Co A, 702d Td Bn (SP)
- 1 Plat Co A, 17th Armd Engr Bn

Task Force C Col. H. C. Parker
- 335th Inf Regt (less 1st and 3d Bns)
- 1st Bn 66th AR (less Rcn Co) Cos F and I, 66th AR atchd
- 1 Plat Co A, 702d TD Bn (SP)

CC A Control
- Hq CC A
- Artillery
- 14th Armd FA Bn (w/1st Plat Btry D, 195th AAA Bn)
- 92d Armd FA Bn (w/2d Plat Btry C, 195 AAA Bn)

Task Force B Col. W. H. Stokes
- 66th AR (less 1st Bn, 3d Bn, Co F, Rcn and Maint Cos)
- 3d Bn 335th Inf Regt
- 1 Plat Co A, 17th Armd Engr Bn
- 1 Plat Co A, 702d TD Bn (SP)

Task Force D Lt. Col. W. G. Merriam
- 82d Armd Rcn Bn (less Co B, 1 Plat Co A and 1 Plat Co D)
- Co A, 17th Armd Engr Bn (less 2 Plats)
- Co A 702d TD Bn (SP) (less 3 Plats)
- Maint Co 66th AR (w/det Maint Bn 2d Armd Div)
- Co A, 48th Armd Med Bn

Combat Command B—Commanded by Brigadier General I. D. White

Task Force X Lt. Col. H. L. Hillyard
- Hq 67th AR
- 1st Bn 67th AR (Cos A, D and I)
- 1st Bn 41st AIR
- 1 Plat Co C, 702d TD Bn (SP)
- 1 Plat Co B, 17th Armd Engr Bn
- 78th Armd FA Bn (Btry A, 195th AAA Bn atchd) direct support

CC B Control
- Rcn Co 67th AR
- Co B, 17th Armd Engr Bn (less 2 Plats)
- Co C, 702d TD Bn (SP) (less 2 Plats)
- Co B, 82d Armd Rcn Bn

Task Force Y Lt. Col. C. J. Batchelder
- 3d Bn 67th AR (Cos C, G and H)
- 3d Bn 41st AIR
- 1 Plat Co C, 702d TD Bn (SP)
- 1 Plat Co B, 17th Armd Engr Bn

CC B Trains
- Maint Co 67th AR
- Co B, 48th Armd Med Bn
- "A" Trains, CC "B"

(To be concluded)

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CARDED

Southern France Exploits of Task Force Butler

by Brigadier General Frederic B. Butler

PART I

This is the first of two articles on the operations of a Provisional Armored and Mechanized Cavalry Unit in exploiting the invasion of Southern France. Through the valuable medium of personal experience we mold our basis for improvement of our Army of the future. We have some interesting reading to boot.

(**Introductory Note:** On August 15, 1944 the U.S. Seventh Army landed on the coast of southern France in the area between Toulon and Cannes. The U.S. VI Corps, commanded by Lieutenant General Lucian K. Truscott, made the initial assault at 8 A.M., with the 3d Infantry Division on the left in the St. Tropez area, the 36th Infantry Division on the right in the Frejus area, and the 45th Infantry Division in the center near St. Maxime. Already a Provisional Airborne Division had been dropped several miles inland and was cutting the German communications with the beach area. The highly successful landings were followed by an immediate consolidation of the beachhead, movement west by the 3d Division to isolate Toulon and Marseille, east by the 36th Division to the Italian border, while the 45th Division made contact with the airborne troops and drove northward in the center. Following the American units over the beaches on D + 1 the French II Corps consisting of two infantry, one motorized and armored divisions landed in support of the U.S. VI Corps. According to the plan the French were earmarked for the assault on the ports of Toulon and Marseille; the rapid advance of the Americans during the first two days made this assault imminent. The release of the French stripped VI Corps of its only armored division and caused the Corps Commander to bring into being as planned a provisional armored group composed of corps armored units under the command of the Assistant to the Corps Commander, Brigadier General Frederic B. Butler. This article is General Butler's personal memoir of the operations of the task force that was to bear his name. General Butler served as Assistant Division Commander, 34th Infantry Division, and Assistant to the Corps Commander, VI Corps. He is now Sixth Army Engineer.

This account of his experiences was written from memory while he was crossing the Pacific in 1946. The undersigned as a member of the Army Historical Division borrowed the manuscript for research and secured General Butler's permission to edit and publish it.—**Major James D. T. Hamilton.**)

THE troop list as constituted for the American VI Corps for the invasion of Southern France included as floating reserve a combat command of a French Armored Division. At a staff meeting less than a week prior to the Corps loading out from the Naples area for the invasion, General Lucian K. Truscott, the Corps Commander, announced that he feared the French armor would be taken from him and returned to French control shortly after landing. Such a move, he said, would leave him without a force capable of exploiting a success. In order to overcome this deficiency, he announced that he planned to constitute a Provisional Armored Group from elements of the Corps. Turning towards me, he added, "And if there is such a force, you will command it." He then directed that I prepare a tentative organization, building it around the Corps reconnaissance squadron, the 117th Cavalry Reconnaissance Squadron (Mecz). I was then serving in the capacity of Assistant to the Corps Commander.

After the conference, a detailed conversation developed the possible missions of the force. Most probable, and the one for which the Force was designed, was to sweep to the north towards Lyon, proceeding initially to Sisteron on the Durance River and from thence to be prepared to turn west or to continue northward.

Time was short. My first step was to select a staff from amongst assistants in the various Corps staff sections. Next, a provisional troop list was prepared. Then as the staff was assembled, various studies were assigned—detailed map reconnaissances of routes, terrain appreciation, air-ground cooperation, Maquis liaison, and most pressing of all, a communications plan. I realized that the success of any such operation was tied to a successful communications plan.

In evolving a command and communications plan, I entertained two considerations, one to draw on the Corps Signal troops, the other to superimpose my headquarters on the Reconnaissance Squadron and develop my communications around its net. The former plan drew so heavily on Corps that I abandoned that plan and decided to build around the latter scheme. Commanders of all units were called in, the plan was explained, and communications officers were closeted with the Force Signal Officer. An SOI was produced and mimeographed.

The Force as approved consisted of the following:

117th Cavalry Reconnaissance Squadron
59th Armored Field Artillery Battalion
753d Tank Battalion (less one Medium and one Light Tank companies)
2d Battalion, 143d Infantry Regiment
Co. C, 636th Tank Destroyer Battalion
Co. F, 344th Engineer Regiment
Co. C, 111th Medical Battalion
Detachment, Co. D, 111th Medical Battalion
3426th Quartermaster Truck Company
Detachment, 87th Ordnance Company
Detachment Military Police (VI Corps)

Subsequent conferences were held with the Corps Commander and prior to sailing, the mission had narrowed to a single possibility, "To proceed to Sisteron and from there, be prepared to continue north to seize Grenoble or to turn west and seize the high ground north of Montelimar." All unit commanders involved were briefed on this, the selected route, and all pertinent details prior to departure from Naples. Division commanders were briefed and the whole plan was approved by Lieutenant General Alexander M. Patch, Commanding General, Seventh Army.

As indicated, the Provisional Armored Group, subsequently to be dubbed by the correspondents "Task Force Butler," was nothing more than a plan. Late in the afternoon of August 16, after the 45th Division had made physical contact with the Airborne Division in and around LeMuy, General Truscott ordered the Force to assemble during the day of August 17, prepared to pass through the 36th Division at daylight of the following day. The prepared plan went into effect and the assembly proceeded without incident except that Corps G-4 and the Corps Engineer between them could not mobilize the Engineer Company, a unit that had never smelled powder.

Late in the afternoon of the 17th, Truscott issued his oral order to me. Sisteron remained the objective. After some discussion on the subject, I was permitted my choice of routes. Back in Naples, I had tentatively selected the Route Napoleon, which runs from Nice northwest to Digne, then north through Sisteron and Gap to Grenoble, for the route of advance. It had appeared to be the more direct and had the advantage of a protected right flank—Switzerland and the mountains. Every effort was made to secure road data, maps were studied and terrain appreciations prepared. Prior to leaving Naples, I made the decision, however, to direct the main effort of the Force not along the Route Napoleon but along the roads running eastward from Draguignan to Salernes, Riez, north to Oraison and Sisteron. Careful study of the Route Napoleon indicated the terrain so mountainous that a small enemy force with a single self-propelled gun could have made this "cavalry sweep" just another crawling Italian campaign. Developments proved the choice made in Naples to have been a sound one, and if one needs an object lesson on the value of terrain appreciation, no better incident than this need be cited.

Asked for an estimate of time necessary to reach Sisteron, the Group Commander stated three days for sure, possibly two days. Further questioning by General Truscott, who seemed a bit incredulous, guaranteed him Riez, 45 miles from Draguignan, as the objective for the first night.

As soon as commanders could be assembled in the bivouac north of LeMuy, the situation was reviewed, the order was issued. The importance of initiative was stressed. All possible liaison was established with the

36th Division to assure a smooth passage through the outposts to the north and east. Daylight of the 18th was set for the passage of lines.

The column started before daylight next day, August 18. A reinforced troop of the Reconnaissance Squadron was sent north through Draguignan with instructions to proceed toward North Castellane and develop the enemy situation. This troop, the first scheduled to start, cleared Draguignan without delay and left the routes clear for the main body. The 36th Division had outposted the town the day before. Having watched the efforts of the 142d Infantry the previous day to break through the north portion of the town's outskirts fail, I was prepared to hear of early trouble from this direction.

Remaining elements cleared their bivouacs on schedule and the main column appeared to be rolling. No report came over the command net and as I bowled along a clear road to catch the advance guard of the column, the sun rose and this seemed, after all, to be the sort of expedition we wanted it to be—a rat race.

Joy was short-lived. On the western outskirts of Draguignan I began to run into a stalled column. What was the difficulty? The commanding officer of the Reconnaissance Squadron, Lieutenant Colonel Charles J. Hodge, was soon found in his radio command car. The point was held up at the first bridge out of town. The outposting troops had set up a road block at the bridge, and this little obstruction had to be removed before the "charging" troops could advance! And what a block it was! It took a half hour's feverish work to clear a lane. The 36th did not take a chance. The banshee itself (were we in Ireland) could not have come in to disturb the sleep of the lads from Texas. As minutes passed and as good time slipped by, I became concerned and went to the bridge myself, and with my own eyes saw the *friendly* obstacle that held up our progress. There must have been two hundred pounds of TNT in that little bridge—not to mention antitank mines, posts, rails, boulders, and cable! Oh, it was a masterpiece but very disconcerting in the early morning—under the circumstances, and especially after precaution had been taken to post the 36th Division on the plan and ask their cooperation in clearing our columns through the outposts. But those things happen even in a well-ordered war.

I remained on the scene, fuming, fretting, and beleaguering, until I saw the lead vehicle underway. I then got off the road to check the column past and join my squadron leader at his radio car—the nerve center of the whole command—as it came along. But soon vehicles ceased to move. I hurried back to the unfortunate colonel's scout car and very quickly and pointedly brought up the question of the stalled column. "But the column is moving, Sir." Well, I knew more of the movement—and lack of it—than the radio had disclosed to the CP.

"What of Troop C—the flank column?"

"Sir, they report their head clear of the outpost but held up by AT fire. They are sending out dismounted patrols and placing the attached guns in position."

Well, I hadn't expected much progress from that element but was concerned over the slowness of the main column. We needed progress to get at the subsidiary roads ahead of us so that the Reconnaissance Squadron could fan out. Then we would make better time. Also, it was necessary to clear a certain road junction north of Draguignan by 8:30 A.M. A regiment of the 45th Division was to follow us and I guaranteed General Truscott that, barring enemy action, this would be done.

Radio communication was perfect. The head of the column was moving again, but obviously with too much caution. My poor young colonel had a very trying quarter-of-an-hour while I stayed at his still stationary radio car. Leaving interim instructions with him, I made off to the head of the column to give the point commander a few simple fundamentals in methods of bold rapid advance. The 117th was a young unit, having had only limited experience in Italy and never confronted with a wide open situation like this offered to be.

Things began to move a bit better. I made my way back down into town once more. The squadron headquarters had advanced some but was stopped again. Once more I started for the head of the column. It had progressed not more than a mile when my attention was attracted by a madly careening screeching jeep coming up behind me. It was Hodge madly waving and shouting.

I stopped. He stopped. With the restraint and composure of a young actor, and making every effort to be military—but unconcerned—Hodge reported that Troop C on the right had broken through the resistance earlier reported, had taken prisoners and equipment, including one corps headquarters complete with one lieutenant general, his pistol, brandy and staff! The (German LXII) corps commander, Lieutenant General Ferdinand Neuling, was under escort back to the square in Draguignan to be held there for formal surrender to a general officer. Naturally there was no word as to the cache of brandy that had been taken!

This set up young Hodge. His troop really had done a job, had succeeded where the infantry had stalled.

Going back into Draguignan, I met my first German general, after close association with the German army since December of 1942. He was seated on a park bench having a nice quiet dignified weep. With the general was his orderly, general's suitcase in hand. They were in the custody of a cavalry corporal from Troop C and surrounding the pair was a circle of dismounted tankers whose column had moved into but not yet through the town. These tankers were holding back the excited mob of French villagers. The old general was a fatherly appearing soul and I have often wondered the cause of his tears—whether it was chagrin and disappointment, or living fear of the howling mob.

As kindly as was the general's appearance, I take it that he was something of a Hun in his dealings with the populace—and how they were calling for his blood! I had with me a French lieutenant as interpreter. This officer, in addition to speaking English, spoke some German; he was Jewish. The LXII Corps commander rose on my approach and rendered me a military salute, holding his salute until I returned it. The German army had ceased the "Heil Hitler" business. Receiving the surrender and making some statement as to the fight the general's troops had made, I informed the prisoner that I was sending him under officer escort to my corps commander, and thereupon our new acquisition embarked upon his first jeep ride under the chaperonage of a Frenchman—furthermore, and of Jewish background.

Ridding myself of our prize package, I hastened up to the advance guard and now the whole column was rolling—but the head was beginning to falter. Things were beginning to click, however. Hodge was able to give me the picture. The artillery battalion's cub plane had gotten up and was giving the point aerial reconnaissance. The cub had spotted a demolished bridge, had reconnoitered a by-pass through some hills to the north and the only delay experienced was that caused by the narrow winding road. The radio nets that had been set up in our planning back in Naples and on shipboard were working.

By making our detour we by-passed a village into which a small German delaying force had just moved. The French reported this but our column could protect itself from such on the march and I trusted to the Maquis to handle the situation, which they did. These stalwart sons of France, and sons of the Blue Devils, the Chasseurs Alpins of World War I fame, proved invaluable to us. They reinforced the meager infantry in critical situations and guarded our life line to the rear. These splendid patriots had carried on literally barehanded since 1940 and only recently had been armed and organized by the United States and England by means of personnel and matériel parachuted in to them. This business of building up the Maquis had developed quite an organization. As indicated earlier, prior to our departure for France I had secured from the Seventh Army officers of this Maquis contact organization to accompany my column and assist in directing Maquis assistance to my effort. As a commentary on this underground organization, it must be recounted that word of the Group had gone on ahead and our advance was eagerly awaited, but so well controlled was the information that the Germans always were in complete ignorance of our moves. It is only fair to state that without the Maquis our mission would have been far more difficult, if indeed not possible. And contrariwise, the presence of our armor and guns added immeasureably to the strength and assurance of the Maquis.

I noticed here the same French reaction to armor that had impressed me in the early days in Tunisia. At one period during that campaign I commanded an international force in the defense of Gafsa. The French under my command were terribly afflicted with "Tankitis." The German armor in France in 1940 had impressed the French Army, the French nation, the French Empire. With this phobia (more than fear) went the conviction that French arms possessed not a single weapon to combat a tank. And at this stage anything that chugged on wheels was a "tank" to a Frenchman.

Contrariwise their morale went sky high when anything "anti-char" was produced. In Africa, I issued my French batteries high velocity 75mm ammunition with which they felt perfectly confident. Even our little 37 millimeter, so-called and obsolete before manufactured, anti-tank guns gave them confidence. A French soldier with confidence is the equal of any soldier in the world. And so with the Maquis. Our heavy tanks, our artillery and our self-propelled anti-tank guns sent the guerrillas into ecstacy. And how the Germans dreaded the fierce Maquis!

The German dread of the Maquis came to the surface continuously during our race into the interior. Really, some of our adventurous young officers became quite persuasive salesmen. Many and many a garrison was taken after a few shots—an American advanced under a white flag, and a parley. If the German commander could be convinced that he and his force would become American prisoners and not be turned over to the French, surrender usually was accomplished forthwith. Occasionally it took a little additional shooting on our part. In no instance did the Germans ever violate our white flag or the "negotiator."

Later when skirmishes and rapid advances piled the two armies together in the Battle of Montelimar, this sensibly pleasant process of war naturally gave way to killing and torture. And with this turn in the battle died a fearless officer and forceful conversationalist, Captain Omer F. Brown, the commander of the assault gun troop of the Reconnaissance Squadron. He was killed along the banks of the Drone near Grane when his guns made a valiant stand against a determined tank attack by an element of the 11th German Panzer Division.

The work that the little cub planes did for us was as remarkable as any this little brave part of U.S. Army did amongst all its unbelievable exploits. How or why the cub plane survived will ever be a mystery to me. Of course their principal mission was artillery observation and as an infantryman I soon learned that they brought us double comfort. They directed fire—but best of all, they kept down enemy fire merely by being in the air. German gun and mortar crews lay "doggo" when the little fellows were on the prowl. The smart gun crew knew that a battery seen was a battery destroyed when a "Maytag Bomber" was aloft.

In planning my Force, I included a liaison plane from the Corps pool of L-5s. I felt such a craft would help me. I had used the equivalent of one early in

Africa when things were on an extended scale and I knew there was use for one on this mission—if we got into the open spaces. The more eyes the better and surely it would serve in a crisis if radio with Corps failed—which it did. I had asked for a certain type of radio equipment, a "299," in setting up my organization but Corps felt that the "big picture" would not permit my having what I asked for. Accordingly I left my own radio, which was part of the Corps command net, back at our starting point as a relay station and sent my messages all during the first and second days from my forward position by scout car radio to my aide who was with my Corps radio vehicle and he in turn, moving forward, kept in touch with me and attempted to relay to Corps. Naturally the system did not work. At the end of the second day I received a handwritten note from Truscott. It was written the evening before and he burned me up for not keeping him informed. It was a hot note and I was glad there was no telephone communication between us. Amongst other things, he directed me to report by radio every two hours—but he also sent me the equipment I needed.

While the artillery cub worked like fury the first day, the one pilot being in the air over 10 hours, the Corps plane let me down. The artillery pilot did not do a single piece of artillery spotting but he literally towed us along behind him. He would buzz a road and give his report to the advance element commander who then could sweep on if an "all clear" was the report or act with swiftness where trouble existed. My Corps lad however reacted to his mission in a different way. He had not reported to me in person but worked under the personal supervision of the Corps Chief of Staff and was to "liaison" with me.

Like many young officers who find themselves around higher headquarters, this pilot had ideas of his own as to his object in life. He never did come into my radio net that first day nor did I ever see him or have a report that he was over the main body. However, he was over the area, this much we know, for late the second day, several hours after we had reached Sisteron, I received my first radio from Corps—the very first radio I had had from Corps since we took to the road. Presumably it was from the Chief of Staff. It reported that as of such and such a time at such and such a location, Corps Liaison plane such and such had reported elements of the Reconnaissance Squadron proceeding in an overly cautious manner. I was to take corrective action! The elements in question and at the time given had been off as flank guards and had done a good job! Anyhow that was yesterday morning and this was this evening and we were 75 miles forward of where the "offending" troops had been sighted. I took appropriate action and heeled the message into the dust.

The young aviator was more interested in running home and telling "teacher" what he saw than in telling the troops what he saw. His radio was on our net if he wanted to communicate with me and in any event he could have dropped a message.

Our enlisted artillery pilot was different. He appreciated ground action. He hunted, he saw, and he communicated, and that is how he towed us along with his "kite." I cannot help but mention this incident because it is so typical of what one invariably may expect from the youth and inexperience who out of a clear sky become headquarters johnnies—and this includes some aides.

To return to the chronology of the day: For the main column, the sun shone, the birds sang, the flowers bloomed, the French went mad, and the vehicles rolled on. Occasionally there was a stray enemy staff car or motorcyclist to be dispatched, but otherwise the advance was a parade until the point approached Quinson. Our energetic artilleryman in his chug-chug cub had reported a formidable bridge destroyed just south of the town—and our engineers still miles away. The lead vehicles got across a ford but jeeps stuck. The town of Quinson was pressed into service and men, women and children turned out to maintain a ford for us. Not only did they maintain it, they even improved it and all vehicles crossed as the enthusiastic French pushed and heaved and with knowing eye carried select flagstones to dump flatwise into the swirling current. In no time at all they had transformed the bouldery bottom. Maintaining a ford for heavy tanks is no mean problem, but those French were willing—and so happy.

From these good souls we learned how the fine modern reinforced concrete bridge had been destroyed. In the pre-invasion air preparation that was to "isolate" the landing area, our bombers had gone after the bridge time and again but never registered a hit. So alas, a bridge so important that it must thus be bombed at time and time again must be destroyed. If the American air is so unfortunate as to miss this bridge—eh, enfin—the Maquis will do it. Has not explosive been dropped for this purpose? Voila, the bridge, he is no more—and do not bother any more. As a matter of fact, our progress was most seriously impeded by damaged or demolished bridges that the Air had missed but which the Maquis had not.

After Quinson, we rolled on and on. At each halt the road was cleared and all vehicles got under cover in the woods and brush. No air, friendly or enemy, had come over but we just naturally took to the shade. And later it was well that we did.

With still four hours of daylight before us the point reached Riez—the town I optimistically had picked out for my first day's destination. We were there and ahead of time. Should we go on, or should we hole up for the night and sacrifice those remaining hours? I decided to hole up. The vehicles had about five hours gas left in their tanks—and armor without gas is a poor fighting tool. I could not cut down less than that and still fight the vehicles if need arose. We had strapped on to the vehicles anything that would hold gas that we could lay hands on but even so the heavy grades, the de-tours and the long miles run, had eaten into the gas. Our supply trucks had delivered us our refill late the night before and then returned to the beach for a new load. The precious gas refill could not rejoin until after dark. The column therefore was closed up, the bivouacs set up for instant defense and the whole area outposted —the cavalry out at a distance on the roads and the infantry close in. The tankers took their turn too.

As the main body advanced on Riez this first day Troop C off to the east, after its first haul of a Corps headquarters, kept working to the north opening roads and taking prisoners. Despite my friend's observation in the Corps liaison plane, they were very active on their main axis. So also were the sections and platoons that scurried over roads and trails between the main body and Troop C, working and probing always to the north so that no undetected enemy movement could come from that flank to interrupt the speedy advance of the Force it protected.

In like manner the cavalry scurried to the west and northwest prying, peeking, reporting. One platoon of Troop A, reinforced with a section of tank destroyers was given the specific mission of reaching Barjols to the west and blocking that important road center. The town was entered as so many towns were entered by armor, only to find itself in a drove of pestering, buzzing sniping enemy infantry. And in this particular town the enemy wheeled out his own self-propelled guns. Under such circumstances, armored cavalry, if discreet, withdraws, even if covered by one's own, very own, tank destroyers. The mission of the platoon was first, information; secondly to block egress from the town until relieved by Infantry. The little force accomplished its mission and knocked out two German self-propelled guns to boot. I had promised my little flank patrol that the infantry would be out to relieve them by dark, and a motorized combat team of the 45th Division made the vicinity of Barjols that night over the way our force had cleared. The infantry arrived none too soon for our small force was in serious trouble. It was running out of ammunition and with the coming of darkness German riflemen were working out of town in force. Barjols was building up. The 45th made a brilliant fight there and for two days a full scale scrap raged before the Germans would fold up even though cut off and surrounded.

By the time reports by radio came in from Barjols that first evening, from constant reports from the east and from information picked up from the Maquis, I had the first semblance of an outline of the probable situation confronting me. Accordingly I called in Troop C from the east instructing them to leave an outpost above Ampus, some 10 miles north of Draguignan until the 36th Division moved up and to turn the prisoners over to the infantry. Our force being as small as it was I anticipated that I could not spare a man for prisoner-of-war care. The pre-jump-off solution for this anticipated situation was simple. All units were instructed to interrogate prisoners by sampling and then turn them over to the French. But when my young crusaders developed their hidden forensic powers of persuasion and the Germans with vigor set down a condition of surrender that stipulated that the Reichswehr was to board with the U.S.A., my plans were upset. However, we had to sweep on. My usual solution involved a technicality. I would direct that an American noncommissioned officer would command the prison guard of French. We just could not stop nor could we set up PW enclosures all along our extending route. There were more buzzards on ahead!

The decision to stop at Riez was a happy one. No sooner were we off the roads than a flight of German bombers with fighter escort was over us. No sign of us did they see and they continued on to the beaches for a bombing that was costly to the elements still in process of landing. By now too the Germans were panicky. Before we got to the Riez telephone exchange the mayor had a call from the German headquarters at Digne—just 12 miles away. The German general had heard rumors of Americans coming north from Draguignan. "Was it true?" Communications were out everywhere. Those Maquis! Since Riez had maintained its lines there would be no reprisals there, but "take heed!" Apparently the mayor's report satisfied our neighbor for not a single German patrol came near an outpost that night. But "those Maquis." Germans never did like a dark night when Maquis were on the prowl. They stayed locked up in their barracks.

The arrangements that had been set up for Maquis contact were working. Soon there were leaders reporting for instructions. Identities were authenticated. The most welcome and most valuable visitor that first evening at Riez was an American captain—a paratrooper. He was one of several teams who were dropped in prior to the invasion. With him he had a tough little Frenchman, a sergeant. The Frenchman was in the uniform of a Blue Devil, beret and all. And was he a tough bunny—about five feet tall and five feet broad. He was a World War I veteran, but a regiment of his like would wrestle tanks!

About this time an excited civilian dashed into my headquarters circle. "German tanks were at Quinson." We had patrols about there in all directions and none had reported enemy contact. My aide had just come through, complete with radio jeep and my lumbering Fifth Army type caravan. The French can be like that. When they want protection, they see shadows. However, those stalwart citizens of Quinson had worked hard at the ford and no engineers had appeared even yet. In order that the good people would rest that night in peace and be fit for another grueling day at the ford, I sent an outpost back to the town.

Plans were set for the next day. The main body moves on Sisteron. Troop B, reinforced with light tanks and assault guns (105 howitzers mounted in MIV tanks) and with organized Maquis under my American Captain's command as the infantry component, was given the mission of capturing Digne where some "several" hundred Germans were quartered.

The Maquis under my hardy paratroop captain also were given the job of establishing and defending a road block on the Route Napoleon at an impregnable position southeast of Digne. It would be embarrassing if Germans from the south poked into our little Battle of Digne of the morrow.

Radio contact with Corps was out and we were unable to pick up any German traffic. It was a little spooky that dark night and even "Sally and George" who had become our radio friends at Anzio would have been reassuring. Oh for Lilli Marlene!

In order that the Corps would have full information on the events of the day and be cognizant of plans for the morrow I dispatched an officer courier to report in person to General Truscott at the same time hoping that on his return to me, my courier would bring me the Corps situation and future plans. Also, could he please find our engineers! So off went my courier in the dark, without light—and without the foggiest notion as to where Corps could be found. My lad found Corps, the staff protected the General's rest, my report was rendered and my courier returned without information—and without engineers. Best news of the night was the arrival of our supply column and the precious gas.

I had gambled on the first refill the supply column carried. Extra rations were carried on the combat vehicles and we started out with an overload of ammunition. Therefore that first day nothing but gasoline was carried in the supply column and well it was. We had plenty of food, ammunition expenditures had been light and we still had basic loads. Next day it might be different. Organic supply vehicles dumped their loads and went back to the beach dumps for more ammunition to be shuttled up against an emergency. No rest for the drivers.

The patrols were active during the night and the outposts alert. There was little business. Anyone approaching an outpost from the enemy side was carried immediately to headquarters. In every case where parties were thus picked up they proved to be Maquis bringing valuable information. No person was allowed to pass outward through our outposts unless passed by Force headquarters and there were no persons picked up under this control.

In all it was a quiet night and by now the prospects of the venture were in everyone's blood. Foot patrols had worked forward towards Digne and with first light the reinforced Troop was off on its mission to hit early and hit hard. The Maquis were at the appointed assembly areas.

At daybreak the advance guard of the main body advanced through the outpost on the Riez-Oraison road and all was set. Patrols were sent out to the southwest. The main body, consisting of the infantry, tanks, artillery and tank destroyers, was prepared for instant start and held in their bivouacs. I was in my own country now and it was unnecessary to clear roads for any following elements. The enemy, weather and terrain were all with which I had to concern myself. The weather was fine—warm but not hot. The country was beautiful though not too well suited for armored action cross country. The enemy had been bowled over by surprise and was proving not too tough. This was war de luxe and we had not yet had a casualty.

(To be continued)

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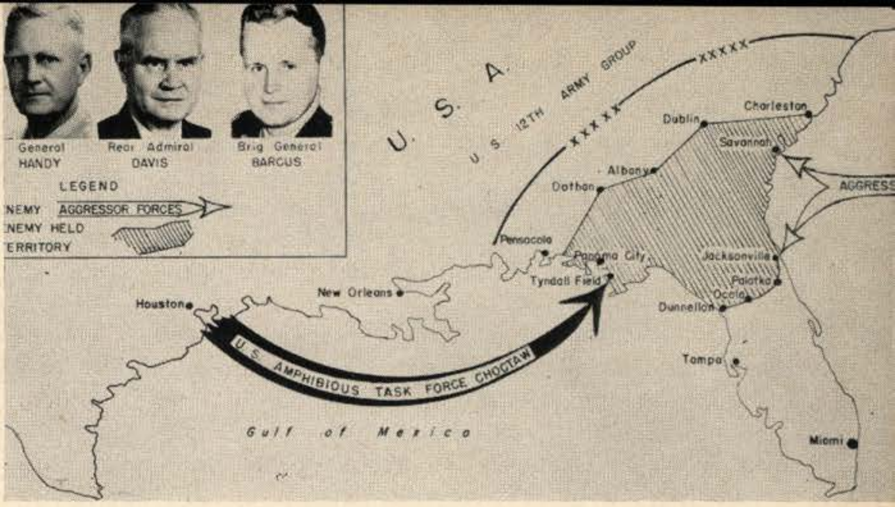
Exercise Seminole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Armor Gets Its First Peacetime Amphibious Training

— Unified Command Succeeds in Exercise —

by Major William H. Witt*

WHEN the last vehicle of Combat Command A of the Second Armored Division had rolled through the surf and beached at Tyndall Field, Florida, on November 4, 1947, "Exercise Seminole" was immediately termed a training success by planners and observers of the Army, Navy, and Air Force.

Initially planned and conceived as the first peacetime training test of cooperation and coordination between the three services, since unification became a reality, the real value of "Exercise Seminole" lay in the fact that it provided the means of keeping alive the "know how" of amphibious operations, so successfully developed during World War II, and to give to personnel new to the services an opportunity to witness and participate in the practical application of procedures developed during the war or improved since the end of the war.

Of inestimable value to the personnel of the Second Armored was the actual experience gained in the techniques of waterproofing vehicles and weapons for overwater transportation and the loading and unloading of vehicles, matériel, and equipment on and off naval cargo vessels. Loading and unloading procedures were of equal value to the Navy's specialists in amphibious operations.

Exercise Seminole had its beginning in May of 1947 when an AGF directive was issued calling for amphibious training of the Second Armored Division. This was followed by coordinating directives issued by the Navy and Air Force which culminated in the first planning conference held at Fort Sam Houston early in July when representatives of all services—Army, Navy, and Air—met to implement the plan for the exercise.

For the purposes of the exercise a mythical theater of operations, embracing the southern and southeastern areas of the United States, was established and was named the Gulf Theater of Operations. General Thomas T. Handy, commanding general of the Fourth Army Area, was designated as the commanding general of the Gulf Theater of Operations. The commander of the Amphibious Force, Atlantic Fleet, U. S. Navy, Rear Admiral R. O. Davis was designated as commander of the Joint Expeditionary Force and Major General James G. Christiansen, commander of the Second

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Armored Division, was named as commander of Expeditionary Troops. Brigadier General Glenn O. Barcus, commander of the Twelfth Air Force, was named to effect the air mission after control of air operations had passed from Naval to Air Force control following the landing of troops.

The Joint Task Force to accomplish Exercise Seminole was designated as Task Force Choctaw. Its principal components were the simulated 186th Infantry Division, designated to secure the beach for the landing of the armored elements, and Combat Command A of the Second Armored Division commanded by Brigadier General John H. Collier. In all, some 3800 Ground troops participated in the exercise as well as thousands of Naval personnel manning the vessels which convoyed the Ground elements to the Florida exercise site. Attached troops which augmented Combat Command A were drawn from Forts Sill, Benning, Sam Houston, Bragg, Jackson, and George G. Meade, Maryland. The assumed tactical problem on which the exercise was based presented the following situation:

On July 1, 1947 the Aggressor Navy launched a powerful surprise attack against the U. S. Atlantic Fleet resulting in a partial destruction of our Naval forces in the Atlantic. Elements of the fleet withdrew to the North Atlantic and into the Gulf.

About the same time Aggressor Air Forces using heavy bombers based in the Caribbean area launched heavy attacks against our air bases in the eastern U. S. By July 15 Aggressor Air had achieved air superiority along the Atlantic coast south of Charleston, S. C.

On August 1, Aggressor Ground Forces (composed of the Third Aggressor Army) made amphibious and airborne landings at Savannah, Ga., and Jacksonville, Fla., which were followed by successful drives inland. Subsequent to 1 September the arrival of air reinforcements for the U. S. forces made it possible to stem Aggressor's inland drive.

By August 15 the arrival of the U. S. Pacific Fleet and its engagements with the enemy fleet had reduced the enemy's Naval strength and had denied him access to the Gulf.

At the outbreak of hostilities the commanding general of the Gulf Theater of Operations was given the mission of expelling the enemy forces from his theater of operations. To accomplish this he organized the Third and Fourth armies as the 12th Army Group. The Group initially was forced to withdraw in the face of superior enemy strength, but it was reinforced by the U. S. Fifth Army and this force, coupled with the addition of Organized Reserve and National Guard units, made it possible to stop Aggressor's inland drive by October 1.

Confronted with this lull in Aggressor successes the commanding General of the Gulf Theater of Operations devised a plan to expel the enemy from the U. S. which included the launching of an offensive along the front of the 12th Army Group, assisted by an amphibious landing in the vicinity of Panama City, Florida. The main effort, utilizing the 12th Army Group was labeled Operation Apache and the diversionary effort of the Joint Expeditionary Force, designed to draw Aggressor Reserves from the front of the 12th Army Group, was called Seminole.

Training to meet this mythical situation started for elements of the Second Armored Division early in the summer, such training being complicated by reason of the fact that replacements constantly were being received who were not qualified in basic military subjects. This condition made it necessary to conduct certain basic training concurrently with amphibious training. The problem further was solved in part by devoting the entire month prior to the beginning of intensive amphibious training to a stepped up program of field training concentrated on march techniques, command post exercises and special field exercises.

The importance of coordinated training and the standardization of procedures for amphibious operations between the services was excellently demonstrated in the participation by the Troop Training Unit, Amphibious Base (USMC), Little Creek, Virginia, in the training of the Second Armored Division for the exercise.

A training team of the TTU was sent to Camp Hood, Texas, home of the Second Armored; late in August to carry out its mission of assisting in the indoctrination and training of Combat Command A and its attached units. In addition, officers and enlisted personnel of the division were sent to the Amphibious Base at Little Creek to attend courses of instruction in amphibious specialties and return to Hood to pass on this information to other members of the command.

Members of the team from the TTU presented a series of orientation lectures, training films, and plays. This instruction was followed by specialists courses which included amphibious intelligence, Naval gunfire, communications, transport quartermaster functions, logistics, medical, waterproofing, basic amphibious methods, and shore party functions and procedures.

A dry landing exercise which included complete full-scale beach installations and actual movement of ships loads across it to assembly areas was conducted as the final training phase. This served to prove the effectiveness of staff planning and familiarize elements of the command with actual techniques of landing, including actual practice in the use of debarkation nets rigged on APA mock-ups.

The movement of Combat Command A to the San Jacinto Ordnance Depot, Houston, Texas, begun October 20, was made in two serials, full track and M-25 tank recovery vehicles moving by rail and all other vehicles moving by overland convoy. The overland convoy was moved on schedule due to careful preliminary surveys of bridges, road nets and routes and close coordination with Texas Highway Police. Individual march units were closed on arrival at the City limits of Houston and were escorted through the city by Houston police, without halting.

The parking and waterproofing area in San Jacinto

Ordnance Depot consisted of a single, one-way unpaved road. Due to the short length of the road, it was necessary to park vehicles in column bumper to bumper. Due to this restriction the column departed Camp Hood with vehicles arranged by ship load so that they would arrive in the parking area in the same order in which they were to be loaded. Thus careful advance planning avoided delays which might have been produced if vehicles had to be rearranged for loading on arrival.

Based on preliminary estimates regarding the date when waterproofing of vehicles could be completed, loading of vehicles on ships originally was scheduled to begin on October 27.

Actually, waterproofing was completed and the first elements were loaded on October 25. The remaining loading was done on schedule without incident, being completed on October 29. This was considered to be in record time due to the limitations of the area at San Jacinto. A single narrow entrance was available to LSM, LCT, and LST loading points and only one LST could be loaded at a time. The area for maneuvering in front of the ship's ramp was so limited that the tank transport vehicles barely had room to make the required turns for approach.

The convoy, which included about 50 Naval ships and craft, moved in two groups. The first group, which included the flagship of Rear Admiral Davis, the USS *Taconic,* and ships carrying the Infantry Force (simulated), weighed anchor and moved into the Houston ship channel toward Galveston on the morning of 29 October. The second group, commanded by Rear Admiral E. H. Von Heimburg, and including the armored elements, sailed the following day.

During the voyage across the Gulf to the Florida objective area near Panama City realism was added to the exercise by simulated attacks by enemy aircraft, simulated antiaircraft fire from ships and the employment of rigid black-out restrictions. Progress of the convoys and employment of friendly aircraft was carefully controlled during the voyage by elaborate communications systems on both the *Taconic* and the USS *Mount Olympus,* Admiral Von Heimburg's flagship.

The first group of the convoy arrived at the objective area on D-Day, November 2, and the simulated infantry division, shore parties, and miscellaneous units were put ashore.

It was originally contemplated that a dry landing would be made by the armored elements, so during the night of November 1-2, Naval Seabee parties unloaded and secured steel causeways, which had been lashed to and transported across the Gulf on the sides of an LCT.

Early on the morning of D plus One, preparations were made for the landing of Combat Command A, but due to changes in tides and shore currents it was found impossible to marry the landing craft to the pontoon causeways. Hence the decision was reached to land Combat Command A through the surf to the beaches. This lent realism to the exercise since it was emphasized by all members of the high command present that plans for exercises of this kind must be sufficiently flexible to meet changing conditions, either climatic, hydrological, meteorological, or as the tactical situation dictates.

Another evidence of the flexibility of the Seminole plan occurred in the landing sequence. Initially it was planned to land elements of Combat Command A in the order: armor, artillery, infantry, with supporting troops being landed concurrently as the situation permitted. But a request from the commander of Expeditionary troops directed that the artillery be landed first which was done. By landing earlier than scheduled the artillery was able to reinforce the fires of the 186th Infantry Division artillery (simulated).

Elements of the armored force landed on the beaches under simulated battle conditions with loudspeaker equipment blaring out actual recordings of battle noises and demolitions set off on the beaches to simulate artillery fire. Planes, both enemy and friendly, flew overhead, planes designated as enemy swooping down to the beaches in simulated bombing and strafing attacks.

Opposing the simulated infantry division and Combat Command A was Aggressor, actually composed of some 150 troops, dressed in the distinctive uniforms developed at Fort Riley, Kansas, and using simulated tanks and weapons employing pneumatic rubber construction.

Landings proceeded on schedule until completed on D-plus Two. Units moved inland to designated assembly areas. The armored landing force commander was directed to initiate plans for the breakout from the beach area. Plans included complete employment of all supporting forces, including air and naval gunfire, for the seizure of Panama City, securing the area for future operations. Upon completion of plans and issuance of orders to lower units the operation was terminated. Security of assembly areas was maintained by a perimeter defense and interior patrols, which enabled the units to develop the intelligence phase of the operation through prisoners taken from Aggressor and other intelligence collected.

Reloading was begun on November 6 for the return to San Jacinto, and the elements of the Second Armored returned to Camp Hood late in November.

At the final critique Major General Christiansen restated the objectives to be reached by Ground Forces:

a. Preparation of units and individuals for their respective and collective functions in the conduct of landing operations.

b. To maintain the art of staff planning on a high level for amphibious operations.

c. The development of techniques in loading and landing armored forces and other heavy equipment.

He concluded with the opinion expressed by members of the high command of all three services—that the objectives had been reached in a highly creditable performance. Admittedly, mistakes were made, but it was clearly understood that the exercise was designated for coordinated training and that operational mistakes could be discovered only through practical application.

A NEUTRAL VI

by Captain Fergu

Here is an article by a re
Armored Cavalry Journ
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GERMANY has been demilitarized. Crossing the German frontier by rail from Venlo, Holland, the train halts at the frontier station of Kaldenkirchen in the British Zone. On the platform are four uniformed German Frontier Guards carrying Lee Enfield rifles. As the passengers alight for customs and passport inspection they are escorted by German officials with side arms. At the entrance and exit of the customs shed are further armed guards. The only Allied representative in the station is an unarmed Englishman whose task is to make decisions when appealed to by the young German passport and customs officers.

Germany today is a land of anomaly; this is merely one example. "There is only one true generalization that can be made about Germany," a correspondent from a London newspaper told me the day I arrived, "and that is that no generalizations can be made about Germany." He spoke the truth.

German economic recovery tomorrow is closely linked with the German economic plight today. The man-in-the-street in Germany does not as a rule concern himself with ideologies. He cannot afford to be an altruist or a philosopher. His first thought is for his daily bread—an uncertain commodity in these times. Next he gives his attention to the future—his future. The community must be disregarded for the moment; his own family and their prospects during the next five years or so fully occupying his attention.

We do not appreciate in Ireland how difficult life is in Germany. Not alone are all foodstuffs, clothing, etc., very tightly rationed, but it is quite frequent for coupons not to be honored for several weeks at a time, due to scarcity of supplies or transport. A four-month drought this summer has seriously injured the German potato crop. All areas suffer occasionally from non-distribution of rations, but probably the worst hit of all is the Rhineland, with its crowded cities of Köln (Cologne), Düsseldorf, Bonn, etc. The British Zone, with over twenty-two million persons, is the most populous zone. It is also the most highly industrialized and least agricultural. This alone is a cause of shortage. In addition, since the recovery of German economy depends upon industrial exports and especially upon Ruhr coal production, heavy workers and coal miners must receive additional food rations. Non-industrial areas in the British Zone, such as the Rhineland cities, suffer accordingly, as rations for the industrial workers must be honored even if others go without. However, it is interesting to note that, if always delivered, the British Zone food-scale, calculated in calories, is almost as high as the American, whereas the French and Russian food-scales are far less than the British.

Foodstuffs are not the only rationed goods. Clothes are virtually nonexistent. The monthly soap ration is a piece of *ersatz* soap rather smaller than a box of matches in size. By the same token, matches are rationed to one box a month. Shoelaces cannot be bought —string dipped in ink replaces them for most people. But many, especially in the Rhineland, have no shoes. Goods which are not rationed in most cases simply cannot be bought on the open market.

The German *Reichsmark* is a coin without a known value. There is no official exchange rate, but Occupational Personnel can purchase marks at 6d. (10 cents) each. To the German buying his rations the mark is worth something nearer 1s (20 cents). But apart from rations and the very few minor items which can be bought in the open market, the mark is almost valueless. Cigarettes are the universal currency, at the price of five marks per cigarette. There is a mistaken impression, possibly fostered by certain journalists' stories, that the cigarette passes from hand to hand as currency until at last the blackmarketeer or farmer smokes it. The truth is that practically everyone smokes a cigarette immediately on getting it. Coffee, another unobtainable commodity, is more precious even than cigarettes, but being bulky is a less handy form of currency. The universal payment for services is a

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★AN COSANTOIR, Irish Defense Journal.
★★Ex-Cavalry Corps, Irish Army.

SITS GERMANY*

s N. Fitz Gerald**

CARDED

gular contributor to the
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mber of a neutral nation
our full consideration as
hose representatives are
solution to the German
recovery of Europe and
f the world.

cigarette, an unfortunate exchange medium.

The black market is now thoroughly organized and is immense in its ramifications. The authorities can do little to control it, for the shortages are too great. In Berlin most of the supplies for the black market come from the Russian Zone, through the Russian Sector of Berlin, but are sold in the French Sector.

RESULTS OF BOMBING

The economic collapse of Germany in 1945 was not due merely, or even mainly, to bombing. Undoubtedly the bomb damage is immense—and it appears to be greater because after two years no effort has yet been made to demolish the shells of buildings which tower precariously towards the sky, roofless and tottering and unreal. Only in Frankfurt a. M. have I seen any start at clearing the rubble. Elsewhere streets and pavements have been swept to allow traffic to pass, but the bricks, girders, remains of furniture, baths and bedsteads, are piled up on either side of the thoroughfare. Köln is the perhaps worst damaged city, for suburbs which the bombs left intact the battle swept away.

But all large cities appear desolate. Berlin's Wilhelmstrasse and Den Linden are for all the world like an untidy version of the Roman *Forum* on an immense scale. The Reich's Chancellory, where Hitler and Eva Braun spent their last days, and in the garden of which they were cremated, holds in its *foyer* the rusted remnants of tanks and trucks; even a twisted Lewis Gun lies near the entrance still undisturbed two years after the last shot was fired by Zhukov's Red Army troops.

However, the actual injury to production caused by strategic bombing was extraordinarily slight. In Germany industry was not concentrated in large cities but dispersed. As a result, for instance, Hamburg, a large port and industrial center which received some of the heaviest Allied air assaults, was responsible for only 3.36 per cent of the total German war production. The 8,600 tons of bombs reduced this figure to 2.35 per cent—a loss of 1.01 per cent of the German war production; a mere trifle.

The greatest attacks upon a single industrial target were the raids upon the Schweinfurt anti-friction bearing concerns. Four hundred and fifty tons of bombs were dropped on a concentrated area; the result, destruction or damage to 10 per cent of machinery and loss of 20 per cent of stocks of completed bearings. Again, not a startling result.

The *U.S. Strategic Bombing Survey* (Washington, 1945) computes that it required an average of 15,000 tons of bombs to reduce German industrial production by 1 per cent. In 1944 the production loss was 17 per cent per annum. In the first four months of 1945, when raids were intensified and the French airfields employed as Allied forward bases, this figure increased to 19.5 per cent per annum. But many industries, destroyed in one place, reopened elsewhere within a very short time.

Damage to dwelling space was far more severe than damage to factory buildings. Fire raids, which were comparatively useless against factories, were responsible for 75 per cent to 80 per cent of the dwelling-space destruction. Hamburg lost 31 per cent of its dwelling houses in the raids mentioned above (that is, 300,000 houses), Bremen lost 7 per cent (5,680 tons of bombs dropped). Only 49 cities of a population exceeding 200,000 were deliberately raided. In all, 25,000,000 German civilians were subjected to air attack, of whom 305,000 were killed, 780,000 wounded and 5,000,000 evacuated as a result of bomb damage. To complete the record, it is of interest to note that the RAF and USAAF lost in action 158,546 all ranks, or one *trained* Allied life for less than two German civilian lives! Strategic bombing was not attempted by the Red Air Force.

At the worst period, 20 per cent of Germany's non-agricultural workers were engaged in bomb-clearance, removing plant to new sites, etc. This was a serious strain on man-power, but it should be noted it is taken into account in the figures for the total loss to German industry given above.

The most successful raids were those on transport, especially upon the railway-systems of Germany. The results are still visible today—nearly every siding shows evidence of burned-out rolling-stock, and it is not infrequent to see burned and rusted trucks and even locomotives lying disregarded at the bottom of railway embankments. From August 19 to October 28, 1944, the total railway truck-loadings were reduced from 899,091 to 703,580, a loss of about 22 per cent. This achievement, however, required 35,000 tons of bombs. And in spite of the offensive by Allied air power, the net rail ton-mileage at the end of 1944 was higher than before the outbreak of war in 1939!

Strategic Bombing Uneconomic

If the above figures show that bombing could not cripple industry, there are other figures to show that it could not break morale. According to Nazi estimates which have the appearance of being fairly accurate, the morale in twice-bombed cities was higher than in unbombed communities. Over 1,400,000 tons of bombs fell on Germany, yet industry and morale were not substantially reduced. The *U.S. Strategic Bombing Survey* states that "Even if the final military victories that carried the Allied armies across the Rhine and the Oder had not taken place . . . the German armies would have had to cease fighting within a few months." But it goes on, "In the actual case—as in most cases in the history of wars—the collapse occurred before the time when lack of means had rendered further resistance physically impossible." Surely this, taken with the figures quoted above, is an admission that the victory of the Allies was not due to strategic bombing.

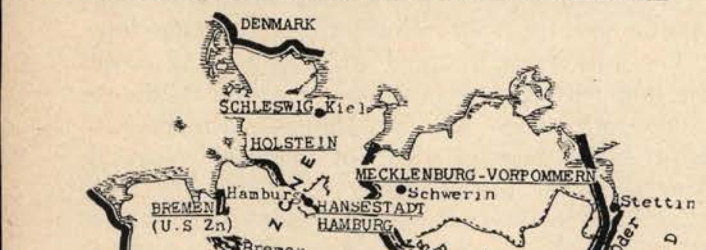
A competent observer, writing in the English journal, *The National Review,* a few months ago, summed up the whole question of strategic bombing as follows:

"In 1918 we had no strategic bombing of Germany, and there was only one front, for Russia was out of the war. The decisive battle was at *Amiens,* August 8, and Germany surrendered three months later. In 1944 we had the strategic bombing of Germany, absorbing the services of some 28,000 combat planes and 1,335,000 men—which does not include the masses of men and women working in aircraft factories, etc. Mighty Russian armies were also sweeping down upon the enemy's rear. The decisive battle was at *St. Lo*—not far from *Amiens*—July 25. Yet the enemy prolonged his resistance for nine months. It is hard to reconcile this with the alleged overwhelming importance of strategic bombing. The enemy was already beaten before the bombing had produced anything like the ruinous effects expected."

If victory is to be gained not in the air but on the ground—as it was in Germany and also in Japan (for the A-bomb did not defeat Japan, but merely gave an excuse for a militarily crippled nation to surrender)—surely there is far better employment for the men and material expended on strategic bombing if used with the ground forces as soldiers, tanks and guns. Or if as airmen, then as an airborne army, such as would have turned the scales at Arnhem, had it been available.

With the annexation by the U.S.S.R. and by Poland of East Prussia, Silesia and all German territory east of the Oder and Neisse, Germany lost her great agricultural area. Germany was never completely self-supporting as regards foodstuffs, but a very large proportion of the agricultural produce came from the regions beyond the Oder, especially from East Prussia. For over a century German economy was organized upon this basis. Accordingly, the loss of most of the German "larder" is undoubtedly the greatest cause of the postwar economic collapse. This is further aggravated by the fact that the Russian Zone of Germany (the portion under Russian occupation but not for-

MAP OF THE FOUR ZONES
OF OCCUPATION OF GERMANY BY LÄNDER


DENMARK
SCHLESWIG
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Schwerin
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Bremen
NIEDERSACHSEN
Celle
R. Elbe
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MARK
BERLIN
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Hanover
Braunschweig
Potsdam
Herford
Magdeburg
BRITISH
Essen
Dortmund
NORDRHEIN-WESTFALEN
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RUSSIAN ZONE
SACHSEN-ANHALT
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Leipzig
SACHSEN
Düsseldorf
Köln
Bonn
Weimar
Dresden
THURINGEN
Wiesbaden
HESSEN
Koblenz
Frankfurt/M
Trier
RHEINLAND-PFALZ
FRENCH
AMERICAN
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Prague
Mainz
SAARLAND
Saarbrücken
Heidelberg
CZECHO SLOVAKIA
WÜRTEMBERG-BADEN
ZONE
Nürnberg
Stuttgart
LAND BAYERN
R Danube
Tübingen
ZONE
SÜD-WÜRTEMBERG
FRANCE
Freiburg/Br
München
SÜD-BADEN
Basel
SWITZERLAND
AUSTRIA

BRITISH ZONE.
Land Nordhein-Westfalen
Land Niedersachsen
Hansestadt-Hamburg
Land Schleswig-Holstein

FRENCH ZONE.
Land Rheinland-Pfalz
Saarland
Land Süd-Baden
Land Süd Würtemberg

U.S. ZONE.
Land Hessen
Land Würtemberg-Baden
Land Bayern
Land Bremen (*Bremen Enclave*)

RUSSIAN ZONE.
Land Mecklenburg-Vorpommern
Land Mark Brandenburg
Land Sachsen-Anhalt
Land Thüringen
Land Sachsen

BERLIN—*Four Sectors.*

mally annexed) is permitted to transfer only a small portion of its agricultural surplus to the Western zones.

As a result the British and U.S. Military Governments have been compelled to redesign the economy of their two zones. Food must be purchased abroad, and to pay for these imports Germany must export. It is for this reason primarily that the *Bipartite Board* (British and U.S. Combined Zones) has authorized a considerable increase in German industrial production, abandoning the original Potsdam agreement. In the case of the steel industry, for instance, the *Level of Industry Plan* of March, 1946 limited annual production to 5,800,000 tons, whereas the new scheme fixes the maximum at 10,700,000 ingot tons. The late British C. in C., Marshal of the RAF Sir Sholto Douglas, announcing the new *Level of Industry Plan* on August 29, 1947, stated:

> "The fact that the 1946 plan has for some time been regarded as obsolete has produced a most unfortunate atmosphere of uncertainty in Germany . . . The importance of reaching a firm and reasonable settlement has increased with the passage of every month."

British and U.S. Taxpayers Foot the Bill

Under this new economy Germany must export more than ever before. But at present it is not even possible to reach prewar figures. In 1936 the monthly production average of steel ingots was 1,155,917 tons; in June, 1947, it was only 204,209 tons. The same is the case with practically any other statistics one might examine.

To make up the enormous deficit of foreign currency for the period while German industry gets under way and begins to export, Britain and the U. S. contribute an annual sum of $300,000,000 each, with which food and other essential imports are purchased for the German population. In the month of August, 1947—the latest month for which figures are available—the British Control Commission bought for the residents in the British Zone 480,000 tons flour, etc., 8,898 tons skimmed milk (from U.S.A.), 217 tons cheese (from Denmark), 150 tons fresh vegetables (from Holland), and 8,614 tons fish (from United Kingdom). In November 1947 the U.S.A. generously undertook the burden of supplying a considerable portion of Britain's dollar contribution, thus relieving somewhat that unfortunate nation.

Some foodstuffs are also sent into the Combined (British and U.S.) Zones from the Russian Zone, in exchange for manufactured articles, etc., but on neither side is delivery up to date.

The French do not contribute financially to German imports, in the manner of Britain and the U.S.A. The German correspondent of an Irish newspaper wrote recently that the French make their zone *"self-supporting."* This is not strictly accurate—while the French Zone is mainly agricultural, at the same time there is a considerable deficit which is paid for indirectly by the British and American taxpayers.

Apart from the problems created by the Soviet and Polish annexation of large parts of eastern Germany there are other reasons for the economic collapse of the Reich. With the dissolution of the native government a condition of anarchy arose. This anarchy—which is really a void in the social order—cannot be overcome by temporary foreign rule. It is important to remember that in Germany there exists a situation which has never before been experienced in modern (post-Roman Empire) Europe: *the government of an immense and powerful nation surrendered unconditionally and suddenly ceased to function, leaving no successor.* In 1918 the victorious Allies dealt with the government of the new German Republic; in 1945 they recognized no government. In spite of all the Allied powers could do anarchy set in, control was lost, human incentive failed, communal ties disappeared, and the German population—imperceptibly but inexorably—went socially and economically "amuck."

It is generally felt by the Germans and Occupation Authorities alike that a single controlling power, instead of four distinct Commissions, might have gone a long way towards saving Germany from the chaos of the present time. The British CCG and American OMGUS recognized this officially some months ago when they merged their two zones for economic matters. They sought to get the French to join them, but without success.

Other reasons for the acute situation in Germany are the black market—but for which the weekly rations might be at least doubled—the world crisis, which compels all nations to give full attention to their own domestic problems, and the acute shortage of manpower due to the retention of prisoners of war by the British, French and Russians.

Zonal Policies

Recognizing that it is essential, not alone for Germany but for Europe, that German economy should stand upon its own feet as soon as possible, the British and U.S. Military Governments do their utmost to insure that the occupation forces shall not constitute a strain upon German resources. For this reason all food eaten by British and U.S. officials is imported from their own countries (the British are rationed on the same scale as in the United Kingdom), the black market is held down by the issue of special occupation currencies (sterling and dollar), CCG and EUCOM have instituted their own public transport systems in the major cities, leaving the local transport systems almost entirely to the Germans.

At present control of local government, economic affairs, etc., is gradually being handed over to Germans. In the meantime the military are largely being replaced by civilians, especially in the British Zone. There one sees few uniforms, even military officers in CCG wearing mufti in their offices. There is a good reason for this; military government is essentially the antithesis of the liberal-democracy which the Western Powers are trying to instil into German politics. The British CCG therefore tries to appear as unmilitary as possible and has in fact almost withdrawn the uniformed "strong-arm" which acted as a continual reminder to Germans that the victor is in occupation. However, at times democratization is jarred by such events as the recent seizing in Germany of all copies of a British newspaper carrying a critical attack upon the personnel of CCG and the banning of any translating of the article. Similarly the "demilitarization" of German youth was not assisted by the British military tattoo held recently in Berlin against the advice of the civilian elements of CCG. By and large, however, the British have undoubtedly adhered more rigidly to the prescribed policy of the Allied Control Council than the other powers.

The U.S. policy is in principle similar to that of the British, but it is less consistent in its application. Furthermore, in the U.S. Zone one observes far more uniforms than in the British Zone, and all control is carried out upon strictly military lines. A rather interesting difference between the zones, and one which reflects to some extent the mental attitude of the two Powers, is the fact that in the British Zone a great number of Englishmen have learned German and speak it (atrociously but with the best intentions) on all possible occasions, whereas few Americans can or will speak German. Yet there appear to be more *Schmidts* than *Smiths* in the American forces!

The economic policy of both CCG and OMGUS, now combined under the *Bipartite Board*, the *Bizonal Economic Council*, the *Joint Export-Import Agency*, etc., is to make western Germany self-supporting by being able to pay through exports for all vital imports, and also to permit Germany to take her economic place in a Europe which cannot exist without German coal, steel and other commodities. Politically Germany is to be a democratic state, but militarily she must be left impotent. Whether this may in time turn out to be a short-sighted policy remains to be seen, but both France and the U.S.S.R. are insistent upon demilitarization, and in view of earlier pronouncements by the U.S. and Britain, and indeed of present popular feeling at home, there is little likelihood of any immediate alteration in this respect.

After two years of vacillation the Western Powers have decided to dismantle, as reparations, some 800 factories in the Combined Zones. Since the end of the war nearly all these firms had gone into peacetime production and the recent announcement is regarded as a serious blow to German economic recovery. The case of the Kiel *Holmag-Werke* Diesel-engine concern which was permitted to exhibit at the Hanover Fair last summer and subsequently was closed for dismantling, has caused much bitter criticism. The criticism is aided by Communist propagandists who do not hesitate to point out the incongruity of Allied efforts to rehabilitate German industry on the one hand and dismantling orders on the other. In the Soviet Zone dismantling was completed long since, before the Germans had recovered sufficiently to protest.

FRENCH TERRITORIAL CLAIMS

Policy in the French Zone is more readily understood, for it is straightforward. From 1940 to 1944 German armies occupied France; now comes the "payoff." While making nominal efforts to "re-educate" and "democratize" their Zone, the French are chiefly concerned with ensuring that Germany will never again be able to invade French territory. The French have little sympathy for the population of their zone, and this is not difficult to comprehend.

At the same time the French government has the support of practically all political parties at home in its territorial demands; Saarland has now been virtually incorporated into metropolitan France—without consultation with the other Allied Powers—and demands are heard for *"a frontier on the Rhine"*—that is, the Rhenish Palatinate (*Pfalz*), etc. The Ruhr, Germany's industrial heart, in the British Zone, is also mentioned; in September, 1945, General de Gaulle said in a public statement, ". . . *It is therefore indispensable that the eastern frontier should contain—beyond the Rhine —the Ruhr and Westphalian valleys as well as that of the Saar,*" and in the past two years these sentiments have been repeated more than once.

SOVIET SECURITY MEASURES

For the average person in western Europe there is one question of vital interest: what are the Russians like, both individually and in the mass? There is so much disagreement amongst those who ought to be in a position to answer this query that rumor and wild fancy in no small measure replace fact.

The Russian Zone of Germany is not easily penetrated by western journalists, and much that they see forms part of "conducted tours" similar to those organized for visitors to the U.S.S.R. On the other hand the Russian Sector of Berlin can be entered without formality and does in some measure reflect conditions throughout the Zone.

British and American officials in Berlin generally avoid entering the Russian Sector unnecessarily. There is good reason for this, for on not a few occasions Russian patrols have detained uninvited wanderers overnight. I met a young American girl who had recently spent a night in her car watched by two Russian sentries—her German driver had driven unintentionally into the Russian Sector after dark.

Some months ago it was a quite frequent occurrence for Russian patrols in the "corridor" from the western zones to Berlin to fire upon Allied cars travelling on the *autobahn*, but more recently they have desisted, as a result of complaints from the British and Americans.

On the other hand, one may spend a considerable time in the Russian Sector (and probably also the Russian Zone) without encountering any unpleasantness. It is in the main a matter of chance. Why is this so? There is only one ready explanation. Presumably a "*Standing Order*" from Moscow states that local commanders are responsible for security, leaving it up to the local commanders to decide the exact form of the security measures to be adopted. And commanders know that Moscow will stand over their actions.

Individual Russians vary in appearance, manner, etc., for there are a great number of different races amongst the Soviet troops—White Russians, Tartars, Kalmucks, Slavs and Mongols. If one thinks of Russians as revolutionaries, however, one is apt to be disillusioned. Meeting Russian officers in Berlin I found them unexpectedly "western," reminiscent of something I could not at first trace. Then I realized what it was. They came straight out of Russian novels and plays of the nineteenth century; they were Tolstoi's *Prince Andrei* and *Captain Denisov,* Tchekhov's *Ilya Shamrayev* and *Boris Borisovitch*. The greatest revolution the world has ever known could not kill tradition, and Tsarist courtliness has endured until 1947. The privates and corporals are the peasants of "*War and Peace*" and of "*Karamazov*."

The Russian Zone shows every sign of well-ordered production. Fields are harvested, crops planted. There are few factories left in the Russian Zone (a large number have been transferred to the U.S.S.R. as reparations) but those that remain are in full production. Disregarding the spiritual and human aspects of the matter and considering it as an economic problem only, there is no doubt that the Soviet system results in far greater production than the British. Personal liberties are not allowed to interfere with factory work, trade unions do not slow up the assembly line with dissatisfied murmurings. Perhaps once . . . two years ago . . . —but references to Siberia are considered bad form in these regions, *tovarishch!*

The Soviet method differs in almost every respect to the U.S. and British, and in many cases Soviet policy can claim to be more logical and consistent. In the western zones *denazification* is carried out with scrupulous care and few if any are the cases which pass undetected. Unless an ex-member of the Nazi party can prove that he was active against the party he is automatically found guilty and can be given employment only as a laborer. (An exception is made for doctors, since they are scarce in Germany.) The result of this policy is that many men who through their special knowledge and experience might be used to great advantage in responsible positions are now wasted as farm-workers, postmen, and so on. The Russians do not waste manpower like this. If an ex-member of the Nazi party is of value in the new social order he is used. Technicians are employed as technicians; men with *Gestapo* experience are found to be excellent for the *N.K.V.D.* It should be noted that the French in their zone are also logical with regard to denazification and do not waste manpower unnecessarily.

There is little doubt of the Russian policy in eastern Germany. Like the rings of ripples which spread out from where a stone is dropped in a still pond, the U.S.S.R. spreads its sphere of influence throughout adjacent states. Clearly the methods adopted are successful. The naïve admission of a Russian officer to whom I was speaking in Berlin sums up the Soviet policy. He said, "*In the Russian Zone all the Germans are satisfied.*"

This apparent unanimity was achieved by the virtual elimination of the property-owning and middle-classes. Banks and basic industries have been "nationalized" (that is, vested in the Socialist German *Länder* governments) while other concerns are so controlled as to make proprietors little more than state-appointed managers. Land "reform" has broken the large estates into uneconomic units of 10 to forty acres, owned by peasant and ex-tenant farmers. It is foreseen that the new owners will in time be obliged to seek state-help and adopt state-co-operative farming on the Soviet lines—a method of compelling "voluntary" acceptance of the government's wishes.

Rumors concerning the recent actions of General Paulus, the German commander captured at Stalingrad in 1942, run around all zones, but these tales seem on examination to be more fiction than fact.

"AND A THOUSAND YEARS . . ."

There are in Germany some 16 major political parties, as well as many minor groups who aspire to be recognized as official parties. The chief parties at present are the C.D.U (*Christlich-Demokratische Union*), the S.P.D. (*Socialdemokratische Partei Deutschlands*), the K.P.D. (*Kommunistische Partei Deutschlands*—not functioning in Berlin or the Soviet Zone), the D.P.D. (*Demokratische Partei Deutschlands*—a "center" party), and the S.E.D. (*Socialistische Einheitspartei Deutschlands*—a merger of the K.P.D. and S.P.D. in the Soviet Zone and in Berlin). There is no large Right Wing party, but in the British Zone there is the D.R.P. (*Deutsche Rechtspartei*).

However, the man-in-the-street has little faith in political parties or politics, and the great variety of political groups does not indicate a particularly interested following. Perhaps the attitude of a majority of Germans to politics can be summed up by two quotations. The first is the slogan of a Centrist group in the Bremen Enclave (U.S. Zone)—"Thirteen years of Hitler and a thousand years of denazification!" The second is the remark of a German driver—"You say to a man, 'You were a Nazi; you must lose your job, or go to prison, or be hanged.' But when Hitler came he said, 'If you are not a Nazi you must lose your job, or go to prison, or be hanged.' And perhaps some day someone will say, 'You were a democrat; you must lose your job, or go to prison, or be hanged'."

GERMAN COAL PRODUCTION—1936 AND 1947

Net Pithead Basis—Metric Tons. (*Report of Military*

Governor, OMGUS, Statistical Annex, No. 25)

		British	Soviet	French	American
HARD COAL	Monthly Average 1936	9,746,000	293,000	967,000	120,000
	July 1947	6,074,000	243,000	916,000	126,000
BROWN COAL	Monthly Average 1936	4,290,000	8,648,000	—	337,000
	July 1947	4,807,000	8,699,000	—	329,000

The Germans have little confidence in their own people's ability to govern. Even many who are bitterly anti-Ally will remark that they hope the Allies will not leave Germany for many years. This is also no doubt partly inspired by a fear of Soviet infiltration and annexation should the British and Americans leave Germany to her own devices. Even the recent statement to a *Catholic Herald* reporter by Lord Takenham, who is responsible for British administration in Germany, that, *"We have no intention of quitting Germany, in any future under discussion,"* has not measured many people. In western Germany there are surprisingly few Communists, even among those groups whose conditions and environment would tend to turn their sympathies in that direction, for the word "Communist" is regarded as synonymous with "Russian."

THE NEXT WINTER

The condition of life of the vast majority of Germans compels them to turn their attention to purely personal and material considerations. The great fear of all is that next winter should be as severe as the last. The standard of health, even in the U.S. Zone, is so low that any additional strain will be disastrous for many people. In the British Zone, where for two years conditions have been far worse than in the other zones, fear of the coming cold spell is intense. One observer estimates that deaths there may rise as high as 10 per cent. This is an exaggerated figure, for 10 per cent would be over 2,200,000 persons! But a hard winter would undoubtedly cause terrible hardship in the British Zone. In Berlin, cut off as it is from all hinterland where fuel and vegetables might be obtained, there are similar fears for the coming winter months.

As in Britain, in Germany the key to recovery lies in the coal mines. It should not be forgotten that German Industry requires not merely to return to prewar export figures but must exceed them, for Germany can no longer feed itself as completely as before the annexation of East Prussia and the territories across the Oder and Neisse. This production—and especially the coal for this production—must come mainly from the Ruhr, in the British Zone.

Coal production in the Soviet, French and U.S. Zones is now practically at 1936 figures, but in the British Zone it is far below this standard. (See chart above.)

FUTURE PROSPECTS

Looking beyond the coming winter to the summer of 1948, there is every indication that economic recovery will by then be in sight in western Germany. Driving through the Ruhr, from Mülheim to Dortmund, every factory chimney can be seen smoking. It is a strange reflection that an anti-German Englishman or American and an anti-Allied German are agreed that the Bipartite policy is, in principle if not in practice, the only hope for German recovery. On the other hand the policies of the U.S.S.R. and of France, however much they may benefit their own countries, cannot be claimed as advantageous to Germany. Both Russia and France, each for its own reasons, have opposed the Bipartite measures, but there can be no doubt that Western Europe as well as Germany requires German industry.

The new *Level of Industry Plan* is still not sufficiently loose and flexible to permit complete rehabilitation. It is estimated that Germany must export 15 per cent more than in 1936—but on account of the limitations placed upon certain industries (which might be convertible to war-production) the actual required increase of permitted exports over the 1936 export figure of the same goods is 90 per cent—a figure which the *Bipartite Board* frankly recognizes as unobtainable. But there is hope in the fact that Britain and the U.S. have broken away from the restrictions imposed by the U.S.S.R. (which at the same time failed to fulfill its own production and delivery commitments with regard to Germany and the Western Allies) and having introduced one new *Level of Industry Plan* may decide later to authorize another.

ECONOMY AND POLITICS

The present tendency is to regard the world problems as purely economic ones. If this were correct, one could with little hesitation, be assured that German, European and world recovery are in sight. But economics is the tool of politics; and it is rather in the political than in the economic arena that the decisive play will take place. There is no longer any doubt that world ideologies are divided into two camps, and there is no middle course. Many British journals and statesmen, apparently forgetting the Munich fiasco of 1938, talk optimistically of the future, and even Americans can show an extraordinary amount of wishful thinking on this subject, but in Germany there is full realization that the conflict will not be resolved around a conference table. Among many of the Germans in the western zones there is an assumption that if war comes the three western Allies will be Germany, America and Britain.

Whatever the ultimate outcome of the present *impasse*, there is reason to recall the remark made over one hundred and thirty years ago at the Congress of Vienna (1815) about an almost identical situation—*"There is a danger that we may exchange the yoke of Napoleon for the yoke of (Tsar) Alexander."*

CARDED

WAR POTENTIAL

by Brigadier General Patrick W. Timberlake

A member of the Executive Committee of the Munitions Board, General Timberlake gives us the perspective on an important angle of national preparedness—the pattern for fitting our industrial potential into the defense scheme.

THE ARMORED CAVALRY JOURNAL queried: "HOW GOOD (or bad) IS OUR POTENTIAL TO COMBAT AN ENEMY IN THE DEFENSE OF THE NATION?"

Well, that calls for some strong thinking and whisker rubbing.

Contrary to the extremely pessimistic, the Nation possesses a good war potential, most of which is in residue from World War II.

The United States still retains a great reserve of military personnel in its fine body of veterans of World War II. War plants are still in existence and the workers and management which ran them during the war retain their skill and knowledge to produce items for warfare. Nationally, we have the knowledge of how to adjust our economy for an emergency, and, in an emergency, could call back into being the agencies required to coordinate our economy with our war effort. The personnel who staffed such agencies during the late war—with all their experience—can still return to those activities.

However, all that is on the credit side, and, as time goes on, it will become gradually lost to our Nation. Personnel will grow beyond combat age. The type of equipment used in the past will become obsolete as will some of the machinery and plants which manufacture them. Wartime skills will become gradually lost to the individuals who exercised them. And, some of our specialized industries, especially the aircraft industry, have been permitted to decline with such rapidity that their current production is at a dangerous low. Consequently, if nothing is done, the passage of time will mean a decrease of credits and an increase of debits in relationship to the war potential of the United States.

That passage of time meant lost potential was recognized by our Nation's military planners even before the war ended. They knew that if our potential was not fully protected it would diminish rapidly. They knew, too, that such protection meant that measures had to be taken to replace new potential for obsolete and that future potential must be planned in conformity with progress so that we would ultimately replace the declining with greater and more lasting potential.

Fortunately, a number of things occur in our peacetime economy which offset some of the decline in potential.

The current high level of economic activity is making it possible for industrial labor to acquire new and more intensive training in production techniques. Industrial facilities are expanding. These economic factors tend to offset losses in such techniques by past wartime personnel who are no longer associated with industry.

Other factors such as progress in the development of superior products, research which is ever advancing scientific warfare, better production techniques, etc., also negate war potential lost with the passage of time. However, the deterioration of our abilities to sustain a large-scale war cannot be offset completely without great efforts on the part of those in charge of our National Security.

At this writing, many things have been done to preserve or rebuild our war potential. The over-all title for this effort is our National Security Program.

Under that program, there are a number of organizations created to maintain our national strength to combat any aggression in the future. There are also a number of proposals to foster such maintenance even further, and there are also a great number of activities now under way or projected into the future for added assistance in the over-all task.

Universal military training has been proposed as the way of offsetting gradual loss of our reserve of military manpower. If the legislation is enacted, as a result of the plan, veterans passing beyond military age will be replaced constantly in the reserve by youngsters newly endowed with the arts of warfare and basic military training.

Similarly, as the wartime agencies required in the administration of our economy and wartime controls lose their value with passing time, they will be replaced with planned agencies and planned methods and procedures designed to meet the probable and different problems of a future emergency. These agencies, controls, methods and procedures are devised in the form of the U.S. Industrial Mobilization Plan which will be promulgated by the National Security Resources Board.

As you can readily see, through these steps, the national security planners are replacing potential before it is lost. As the value of our present potential declines, the value of the peacetime planned potential rises so that when Time has dissipated what is now in residue of World War II, what is now being created will be developed to a point that no loss will be experienced. With this method of progressive action and planning, should an emergency occur at any time, the Nation is assured of having the strength with which to defend itself.

I have devoted much space to illustrate the general pattern of how war reserves are being maintained during peacetime, but more specific patterns can be found in some of the activities of the Munitions Board, particularly in its activities for the preservation of and creation of plans for industrial potential, which will provide our Services the necessary equipment with which to fight in the event of an emergency.

Nothing is more illustrative of the preservation of industrial potential than the actual program in which the Board has been engaged to preserve the industrial capacity of numerous munitions plants in the United States, which, now—in peacetime—are surplus from our war effort.

Prior to the past war, the United States, aside from a small arsenal system, had no munitions industry, as such. Consequently, in order to engage successfully in war, a munitions industry had to be created—facilities for manufacturing aircraft, ships, explosives, ammunition loading machinery, guns and ammunition had to be built. And, to achieve sufficient production of munitions, numerous facilities for the production of iron, steel, nonferrous metals (such as aluminum), synthetic rubber, aviation gasoline and chemicals, were built or expanded.

All told, the United States spent about fourteen billion dollars in new plants and about four billion for expansions.

To indicate the importance of these facilities, without which the war could not even have been fought, I can indicate here that as of August 1945, the Government owned 99.9% of the explosives and ammunition loading plants; 93.7% of the synthetic rubber plants; 87.2% of guns and ammunition plants; 86.7% of the aircraft and aircraft component plants; 88.3% of ship construction and repair plants and 46.3% of the nonferrous metal plants in the country.

As a happy contrast, to illustrate how our economy is normally pitched to peaceful pursuits, less than 1% of the food processing plants, only 7% of plants used for the production of chemicals and petroleum products and 11.5% of the steel plants were Government financed.

From these statistics, you can immediately see that if capacities of the munitions production facilities built up to defend the Nation in World War II were not in some way protected from dissipation through nonuse or conversion, should another emergency occur it would be necessary to rebuild them, with the consequent loss of time and money. In the light of modern warfare, a nation attacked will no longer have the time required for such building. Consequently, such capacity must be maintained as part of national preparedness against future, possible aggression from its enemies.

To preserve the capacities required for the production of specialized munitions and for that amount of basic materials represented by the difference in normal peacetime production and that required to conduct a war successfully, the Munitions Board has assisted the Services in the disposition and retention of surplus war plants. The program is three-pronged.

The first method is through retention of the Army Arsenal System and the Navy's Shore Establishment twenty-five plants (in addition to the system in existence prior to the late war). These are primarily shipyards, arsenals and other specialized facilities. During peacetime, they will not operate at capacity, but only to the extent required by the peacetime Services. However, even at reduced operation, they will preserve the arts of munitions production and guarantee a substantial increment to war production which will be immediately available in an emergency.

One hundred and twenty other specialized munitions plants constitute the second component of preserved industrial potential. They are an industrial reserve, the title to which is retained by the Army, Navy and Air Force. Originally, the 120 plants cost about $2,700,000,000 to build. In peacetime, they are being held in "stand-by" condition, with the Services leasing them in whole or in part so that the cost of their maintenance will be nominal.

To avoid stiff maintenance cost and at the same time preserve the production capacity of about 170 additional industrial facilities, the National Security Clause was devised by the Munitions Board. These plants are essential to national defense and, at the same time, are extremely valuable to our national economy in peacetime. They had an acquisition cost of about $2,600,000,000.

The National Security Clause consists of a series of conditions or requirements included in the contracts of sale of each of the plants. These conditions provide that, in the event of an emergency, the plant can be rapidly reconverted to war production and that the purchaser is obligated to either accept a war production order—if willing and capable of producing the desired item or items—or relinquish it to the Government for the duration of the emergency. In fairness to the purchaser, the clause provides that any purchaser, from whom a plant is taken in an emergency because of unwillingness or inability to produce the required products, will be compensated for tangible losses, paid a fair rental, and will be reimbursed for the cost of again converting the plant to his own use when the plant is returned to him.

There are a great number of beneficial by-products to the National Security Clause. In addition to its enabling the Nation to recapture the plant in an emergency—an inestimable saving in time—it assures that the plant cannot be altered in such a manner that its designed productive capacity will be destroyed. This eliminates the necessity for extensive reconversion—another great saving in essential time.

The Clause gives the purchaser a "break" in price. This reduction in price is designed to offset the cost of maintaining the plant in top condition for a number of years and for the cost of protecting machinery and designed capacity for which the purchaser may or may not have use.

The purchaser, his stockholders and employees receive a number of benefits. There is complete assurance that the plant will be operated in a war and there will be no costly delays in getting into war work—no confusion nor delays. Naturally, such expediency means that the employee will be guaranteed continuity of employment and will not be assailed with doubts as to whether or not his company will be so employed and whether or not it would be wise for him to shift in employment, losing seniority rights and other benefits.

One of the greatest illustrations of the magnitude of our war effort is the fact that during the war years the United States doubled the number of machine tools it had hitherto possessed. Prior to the war, the U.S. had installed in its factories a little more than a million machine tools and other items of metal forming equipment—without which industry cannot produce most of the country's durable goods and without which modern war cannot be fought.

Of the approximate million machine tools produced during the war, about one-quarter were sent abroad—principally to England and Russia. The remainder constituted war surplus with the end of World War II.

A great number of these machine tools were sold by the Government as part of the plants within which they were installed. A large number of other tools were vital to our national economy and were sold piecemeal to industry, one of the basic assumptions of preparedness planning being that a strong national economy constitutes a big component of any preparedness program.

However, numerous machine tools remained war surplus—not required in our peacetime economy. Without any planning, these tools would have two general fates. They would ultimately have to be sold as scrap or would fall into the hands of speculators who could ship them to countries which might use them for other than peaceful purposes.

There was but one wise solution—the creation of an industrial reserve of machine tools.

This industrial reserve was created under Public Law 364 and the Munitions Board set as a tentative goal some 92,000 general and specialized machine tools to be stored and preserved by the Armed Forces against possible future emergency. As of December, 1947, the one-third mark in the acquisition of the 92,000 tools had been reached and plans were well advanced toward raising the number of tools ultimately to be acquired by the Services in the reserve.

There is no need to elaborate on the savings in time, money, skill and effort resultant in an emergency from the preservation of these machine tools.

The preservation of plants and machine tools remaining from past war effort provides a picture of how existing war potential can be maintained in peacetime, and the program for the predetermination of sources of supply now projected by the Munitions Board can best illustrate one of the many methods of *planning* potential as past potential grows obsolete.

(The stockpiling of strategic and critical materials is highly illustrative of how *actual* potential is achieved. See "Stockpiling: A National Defense Assurance," ARMORED CAVALRY JOURNAL, September-October, 1947 issue.)

It is not hard to understand why the Nation cannot afford to maintain in idle stand-by condition all the specialized factories required in a modern war effort. Therefore, it must plan for the emergency use and, where necessary, the conversion of a big portion of the peacetime production capacity, especially in the durable goods industries and industries making relatively heavy articles.

Another residue of World War II beneficial in industrial preparedness are the comprehensive records of the production by specific factories. These records are highly useful as a register of proven sources of supply. They will continue, for a time, to be valuable, but like all the rest of our war potential left over from our last war that value will diminish as time goes by.

Business will change. New processes are being and will be developed. New products will replace products which will become obsolescent—discarded from the list of war requirements.

Similarly, military requirements will change. Scientific development, the introduction of light metals, atomic energy and guided missiles will cause vast revisions in our war requirements. All these tend to reduce the value of existing records of supply sources and make it mandatory that new records be developed and constantly maintained.

For many months, now, the Munitions Board has been working on this oversized task, and, at this time, plans for the methods and procedures necessary are tentatively completed. The actual leg-work in this long-range program to develop new lists of prospective suppliers is projected to start sometime this year.

The program is generally called the "allocation of privately owned industrial capacity."

Based upon the best estimates of military requirements in any future emergency the Munitions Board will attempt to apportion the estimated wartime manufacturing load to the facilities which appear to be most readily adaptable for the production of wartime material requirements. The Board anticipates allotting to a specific plant only such items as the management thinks it is capable of producing.

Here is the way it works. From the records on hand, which are constantly being revised with new information gathered by the Armed Services, the Board has assembled a list of prime contract sources of supply, the list numbering between ten and fifteen thousand facilities. The procurement planning agencies of the three Armed Services request allocation of these capacities for the production of specific items of supply. After taking into account the production potential of the facility and the importance of the planned procurement, the Munitions Board, allocates such capacities as it deems best for national defense. Some capacities may be allocated to two or more services; others to a single service.

After the allocations have been made, Procurement Planning Representatives of the Services will go to Industry with their tentative wartime shopping lists.

Since the program is entirely voluntary from the standpoint of the manufacturer, he does not have to cooperate in this operation if he does not choose to do so. However, from the excellent reception received by the Armed Forces from Industry, the Board is optimistic that the Service representatives will be well received and given every assistance.

The Service representative will probably show the manufacturer several items desired in an emergency and permit him to select the item which he thinks he is most capable of producing in the desired amounts.

After the selection has been made, the management and Service representative will discuss production problems, including raw materials and manpower. With this groundwork accomplished in peacetime, in the event of an emergency, all there is left to do is award the contracts and let industry produce.

Of course, all the work accomplished in this effort must be constantly revised and maintained up to date.

New war plants and the production capacity for the output of goods for the civilian economy during an emergency have not been overlooked in the planning.

In some instances, especially with new and radically different items of supply required in large numbers, it may prove to be more effective to build new plants rather than reconvert an existing facility. However, every effort will be made to utilize existing facilities —avoiding disadvantageous consumption of months of precious time for construction and initiation of operation in new plants, along with the consumption of materials, services and labor required in new construction.

There are a great number of other plans and activities hinged to the over-all effort of sustaining and/or replacing and improving our national war potential. However, since space is limited, it is best to settle for the foregoing which are illustrative of the over-all effort to achieve and hold a potential which will discourage any "would-be" aggressor in the future.

Consequently, the reader can be assured that the United States has a good war potential, and one which, if we remain alert and active, will grow increasingly more potent in the future. Strong enough, we hope and pray, to sustain world peace.

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BOOK DEPARTMENT

Armored Cavalry Journal

1719 K Street, N.W. WASHINGTON 6, D. C.

Armored Cavalry of the Present—and Future

by Colonel Paul A. Disney*

This article by a member of the G-3 Section at Army Ground Force Headquarters constitutes a part of the active comment resulting from General Gavin's *The Future of Armor* published in our last issue. In presenting this objective material to its readers the Armored Cavalry Journal feels it is serving one of its outstanding responsibilities—that of supplying an impartial medium for the discussion of important military subjects by those whose opinions hold weight.

THE lesson for today, gentlemen, is: Should all tanks be designed to be flown into battle?

The text reference is: Aesop's Fable, "The Dog and the Bone."

A dog with a very satisfactory bone in his mouth found it necessary to cross a small stream on a footbridge. Upon looking into the still water, he saw what appeared to be another dog with a much better bone. In an understandable effort to "improve his lie" he immediately opened his mouth to seize the bone from the other dog. In so doing, the bone which he already had, dropped from his mouth and sank to the bottom of the stream.

Motto: Hang onto what you have until you know that what you are reaching for is a reality.

In the November-December, 1947, issue of the ARMORED CAVALRY JOURNAL, there appeared an article written by Major General James M. Gavin, Commanding General of the 82d Airborne Division. In this article, General Gavin expounds the theory that armor (tanks) of the future must be of such design as to enable them to be transported into battle by aircraft. The article leaves the impression (possibly unintentionally) that we must throw overboard considerations of tanks heavier than those which will be capable of air lift. Such theories should be provocative of considerable thought on the part of all present and future commanders, particularly to those who feel that the need of armor has passed, together with other troops who have the prosaic job of fighting on the ground.

Aside from any discussion on the feasibility of designing *effective* tanks that will be capable of being carried into battle by present or future aircraft, General Gavin's concept of the employment of armor is an extremely welcome one to armored cavalrymen, coming, as it does, from an officer with an enviable war record gained in extensive, actual combat, and a recognized authority on the art of vertical envelopment and exploitation.

It is welcome because it acknowledges the value of armored cavalry in the exploitation role. Exploitation can only take place when properly organized and equipped forces, possessing mobility, protected fire power, and shock characteristics (armored cavalry), have reached enemy rear areas.

By utilizing air transport for vertical envelopment, thus avoiding the necessity of first penetrating or enveloping enemy ground positions in order to reach his rear, the armored cavalryman will find himself in a position to carry out the exploitation mission in a matter of perhaps minutes, rather than days.

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*G-3 Section, Headquarters AGF.

These are thoughts for the future, and, in the light of past experience, we may expect them to be fully realized. We must hasten the day of realization with every effort possible.

However, for those who are charged with the protection of our country in the inescapable present, the cold, hard, unavoidable facts remain, that based on present technical "know-how," non-availability of funds, materials, and a myriad of other considerations, there must remain in existence the much more prosaic type of tank of the present. These are the tanks which must operate in conjunction with the infantry to destroy the enemy, and in the armored divisions to initially break through the enemy positions to reach his rear for exploitation purposes (and also to link up with the airborne divisions on the ground).

The unassailable fact remains that in a fight, a good big man will generally defeat a good little man. The temporary advantage gained by the little man in providing himself with a knife or gun is rapidly offset when the big man does the same.

So it is with tanks. Our tank specifications will be greatly influenced by the type of tank the enemy can place against us in the field. Enemy tanks possessing sufficient armor (either in thickness or strength) and type armament to permit them to roam about on the battlefield with impunity must be combatted by tanks comparable in armor and armament. If the enemy uses a tank weighing 100 tons, assuming that such a tank makes full use of strength-giving alloys, and all the technical skills that we must assume the enemy will have, then we will be opposing them with a tank which, willy-nilly, must be of the same weight, whether we like it or not. Let this statement not be construed as indicating that any thinking armored cavalryman desires a tank behemoth—but simply as a statement of cause and effect.

So, to answer the lesson question:

First—Let us design a tank that may be flown into battle, either whole, or in parts.

Second—Let us continue to develop our present tanks with the idea of making them better than any tank or weapon the enemy may pit against them, regardless of whether this requires a 100-ton tank, or a 200-ton tank, or only a plastic tank.

Finally, let us keep what we have and make full use of it. Never let us be satisfied with what we have, however. Look into the future with an extremely critical eye. *In other words, don't drop the bone until we are sure we are getting a better one.*

* * *

MAIN ST
GIVE

The New Year opened with a grand round of effort by Mother Nature. She can be counted upon to continue to spot some unfortunate section of the land throughout the entire year.

Always first on hand with relief for the victims of flood, tornado or blizzard is the Red Cross. The ability of this fine organization to aid the suffering lies in the voluntary contributions of its supporters. Help if you are able.

For Code Practice at The Armored School

—A MECHANICAL BRAIN

by Captain Madison W. Thomas
and Technical Sergeant J. Paul Brown

THE control center for International Morse code instruction at The Armored School is locally called the "Mechanical Brain."

The "Brain" was designed to service six classrooms, which were in use during the war, although only two classrooms are in use as such at the present time. In case of future emergency, the four closed classrooms could be reopened in a matter of hours. The "Mechanical Brain" is capable of servicing as many code rooms as are required.

This "Brain" is located in a 12- by 20-foot room in the Communication Department area. In the center of the room is the control panel, four feet wide and eight feet high. The control panel is a maze of whirling wheels, flashing tubes, and wires leading in and out of a patching board. In the background may be heard the "dits" and "dahs" of International Morse code from the monitor speaker. The control panel consists of six Keyers, TG-10 (a Signal Corps device for converting an inked tape to audible Morse code), which are mounted on either side of the control panel. The Keyers, TG-10, have been modified by the addition of a tube in the circuit of each to permit transmission of jamming signals in conjunction with the code being sent to the various classrooms. This is in keeping with the school policy of realism in all instruction. In the top center of the control panel is located the electronic keyer, a device designed and constructed by enlisted personnel of this Department to provide lessons from a single tape. Located at the bottom of the control panel are four oscillator amplifiers which supply a tone for use by students in transmitting practice.

In the middle of the control panel is the patching board where any one or all of the 12 Keyers, TG-10, may be wired in with any combination of code classrooms. Each of the classrooms is provided with 10 clear channels to the "Brain." Normally, nine speeds of code and one of tone are sent to each code classroom.

Directly below the patching board is the monitor amplifier which makes possible the monitoring of all transmissions by merely turning the switch to any one of its twelve positions.

The 12 Keyers, TG-10, transmit code at varying speeds from five to 20 words per minute. The individual characters are identical at 5 words per minute and at 20 words per minute; only the spacing between characters varies. For example: On the Boehme Keyer, 60 inches of tape contains 100 characters at 20 words per minute and 25 characters at five words per minute. *Within these limits the characters are always exactly the same, regardless of speed.*

Accuracy of the sound picture of each character is important, particularly in the early stages of instruction. Since no human hand can transmit absolutely perfect code, teletype perforator machines are utilized for this purpose. This is a commercial machine with a standard typewriter keyboard which produces a perforated tape.

This perforator staggers the perforations in the tape in such a manner that the proper Morse code equivalent for each letter or numeral will be produced when the tape is passed between two exciter lamps and two photoelectric cells of an O. H. Boehme keying head.

One exciter lamp and one photoelectric cell are used in conjunction with the perforations in the upper half of the tape for starting the tone, and the other exciter lamp and photoelectric cell are used in conjunction with the perforations in the lower half of the tape for silencing the tone, thereby producing the desired "dits" and "dahs."

The audio tone from the Boehme keyer is piped through the patchboard to a McElroy inker. This inker is activated by the audio tone from the Boehme keyer in such a manner that a stylus is moved up and down in synchronization with the audio tone from the Boehme keyer, thereby inking a tape as it is pulled through the inker. A *perfect* tape can be made.

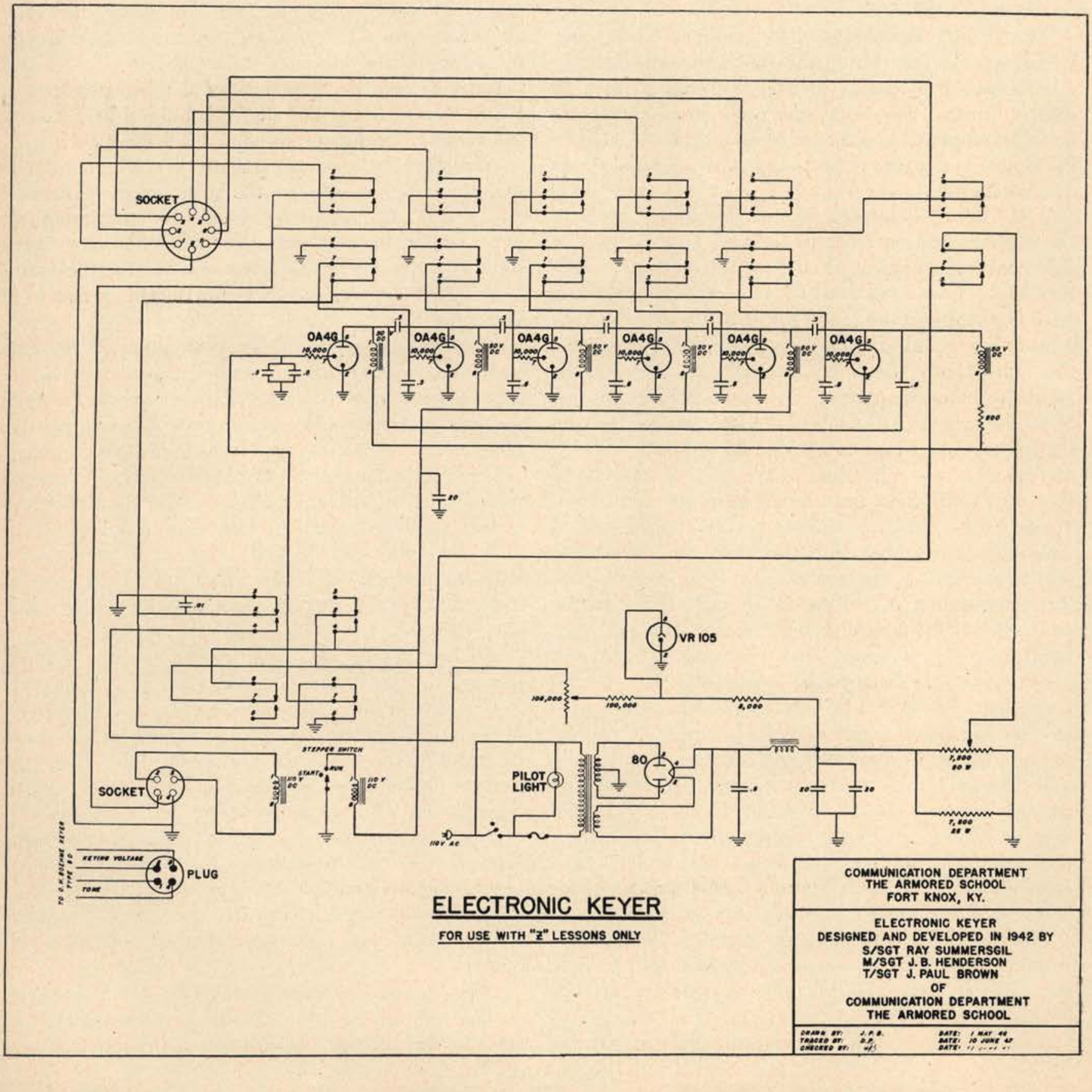
The electronic keyer is used in conjunction with the Boehme keyer in transmitting "Z" lessons. The 26 letters of the alphabet and the numerals 1 through 0 (a total of 36 characters) are divided into six lessons of six characters each. These six lessons are called "Z" lessons.

A perforated tape is cut with groups of six characters each. By means of the electronic keyer, the first character of each group is selected from the tape and sent over line No. 1 as "Z" lesson No. 1. The second character of each group is extracted and sent over line No. 2, as "Z" lesson No. 2, etc., through the six characters of a group, thereby providing six separate transmissions, or lessons from each tape.

This electronic keyer contains six gas triodes and eight double pole-double throw relays. One double pole-double throw relay is a keying relay and is keyed by the space voltage furnished by the Boehme keyer.

When the keying relay is closed, a starting voltage is present at the starting anode of the first gas triode. The keying relay must stay closed long enough for two .5 mfd condensers to charge before the first gas triode* will fire. This will occur only between groups. The space between individual characters or between the "dits" and "dahs" within the characters will close the keying relay; however, it will not stay closed sufficiently long to charge the two .5 mfd condensers present at the first triode and consequently will not fire the tube. Only the space between groups is of sufficient time length to charge both .5 mfd condensers and fire the first tube. The space between groups is three times as long as that between individual characters.

When the first tube fires, its double pole-double throw relay is held down, thereby closing the circuit for the first character in the group which will go out on line No. 1 and at the same time placing the starting voltage on the anode of tube No. 2. Tube No. 2 has only one .5 mfd condenser; so the space between characters is of sufficient duration to charge the condenser and fire tube No. 2. The space between the "dits" and "dahs" does not hold the keying relay down long



ELECTRONIC KEYER

FOR USE WITH "Z" LESSONS ONLY

COMMUNICATION DEPARTMENT
THE ARMORED SCHOOL
FORT KNOX, KY.

ELECTRONIC KEYER
DESIGNED AND DEVELOPED IN 1942 BY
S/SGT RAY SUMMERSGIL
M/SGT J. B. HENDERSON
T/SGT J. PAUL BROWN
OF
COMMUNICATION DEPARTMENT
THE ARMORED SCHOOL

DRAWN BY: J. P. B. DATE: 1 MAY 46
TRACED BY: D.P. DATE: 10 JUNE 47
CHECKED BY: DATE:

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*The gas within the tube is ironized, and the circuit is completed between cathode and plate, allowing current to flow.

enough to charge even one .5 mfd condenser.

The double pole-double throw relay of tube No. 2 is closed and tube No. 1 is extinguished by the firing of tube No. 2. The double pole-double throw relay of tube No. 2 allows the second character of the group to go out on line No. 2 and places a starting voltage on the anode of tube No. 3. The process continues throughout the six tubes.

When tube No. 6 fires, it removes, by means of its double pole-double throw relay, the plate voltage from the interlock relay, allowing it to return to rest. The first tube will then fire when the space between groups comes through.

The design of tube No. 1 allows it to fire only on the space voltage between groups, and the first character of any group is always sent on line No. 1 and consequently the second on line No. 2, etc.

To summarize: The "Mechanical Brain" is the consolidation of material needed to train radio operators effectively. The material is centralized thereby providing economy in both personnel and equipment. The Communication Department of The Armored School could expand from the present 160 student radio operator capacity to any desired capacity in a matter of hours without any additional requirement of material or highly specialized personnel.

* * * *

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Editorial Comment

The Army Equestrian Team, together with Colonel Andrew A. Frierson, U.S. Army, took six first places in the 14 events of the National Horse Show at Madison Square Garden in November, 1947.

Colonel Wing on Democrat started the ball rolling on the afternoon of November 4, taking first place in the International Military Preliminary. Lieutenant Colonel Henry took second with Mexico and Canada taking third and fourth.

The Army Equestrian Team did not place in the Military Touch and Out event, however Colonel Frierson did place fourth in this event.

In Class 115A, First Event Low Score, with two officers each riding two horses, Colonel Henry on Rascal and Roll On; Captain Burton on Airmail and Outcast; two of our horses were eliminated for three refusals placing them fourth with 74½ faults. Mexico took first place with 12 faults.

The Dakota Trophy was won by Mexico with Swizzlestick, ridden by Lieutenant Colonel Symroski, and Colonel Frierson's mount placing second. Ireland was in third place and Airmail ridden by Captain Burton tied with Mexico for fourth.

In the next event which was held on the afternoon of the sixth, the Second Event Low Score (Pairs), Mexico again took first place with Lieutenant Colonel Symroski on Gambler and Captain Burton on Outcast tieing Ireland for second place.

Class 114, The Stratosphere, which consisted of eight obstacles five feet high, was won by Swizzlestick, ridden by Lieutenant Colonel Symroski, with Canada and Mexico placing second and third respectively.

Third Event Low Score, three horses in tandem, held on the afternoon of the 7th, Mexico came out in front with United States and Ireland tieing for second place. Canada took third in this event.

In the Class 115 Finals, Mexico was first, Ireland second, Canada third and the U.S. fourth.

Tortilla, ridden by Colonel Wing came through in Class 116 to win the Bowman Challenge Cup. This is the third time that Colonel Wing has won this cup, and it will be retired in his possession. Rascal, ridden by Lieutenant Colonel Henry, took second place with Mexico taking third and fourth.

In the Whitney Stone Special (fault and out), Swizzlestick, ridden by Colonel Symroski, took first place and Airmail, ridden by Captain Burton, took second to tie with Mexico. Democrat, ridden by Colonel Wing, tied Colonel Frierson for third place.

In the Class 111 for the International Good Will Trophy, Swizzlestick was again out in front and Airmail, ridden by Captain Burton, took second place; third and fourth place going to Mexico.

The $1000 Military Stake was won by Mexico with Airmail, ridden by Captain Burton, taking fourth.

Airmail, ridden by Captain Burton, came through in the following event, the International Individual Challenge Cup, to take first place, retiring the trophy for the U.S. It was won by Colonel Wing in 1941 and again by Colonel Wright in 1946. Lieutenant Colonel Symroski on Swizzlestick came in third in this event.

The International Perpetual Challenge Trophy is a team competition event, with four horses per nation and the best three scores to count. Mexico, Ireland, and Canada were clean on the first round. However, in the jump-off Mexico took first place, Ireland tied the U.S. for second place and Canada took third. Democrat, ridden by Colonel Wing, was clean on the first round and had one fault on the jump-off. Roll On, ridden by Lieutenant Colonel Henry, was clean on the first round and the jump-off. Swizzlestick, ridden by Lieutenant Colonel Symroski, was clean on the first round and had one fault on the jump-off. Airmail, ridden by Captain Burton, was eliminated by fault on the first round.

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OTHER BRANCHES

Major General Alden H. Waitt

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(Editor's Note: All members of "Other Branches" are encouraged to contribute to this section of the ARMORED CAVALRY JOURNAL. *The "Other Branches" section in the next issue will feature a statement by the Executive for Reserve and ROTC Affairs and a lead article on the current activities of the Organized Reserve Corps.)*

The world of chemistry in war is the province of the Chemical Corps. One of the younger branches of our Army, it has steadily advanced in skill and versatility to meet the growing needs of our armed forces. In World War II, it stood ready to match or surpass any chemical weapon our enemies might have used against us. It works now for peace by maintaining the highest possible degree of readiness in its special weapons, for it is this readiness which is the most certain guarantee that they will not be used against us.

The weapons which are the concern of the Chemical Corps are essentially anti-personnel weapons, with the exception of incendiaries. This fact is one which merits the fullest consideration in our outlook on future warfare. The war from which we have just emerged emphasized means of material destruction. It is true that the devastation of the enemy's cities in attack upon his vital economic structure contributed materially to victory and hastened the end of hostilities. But, as we well know, the cost of such war to the victor does not end necessarily with the last bomb dropped. Indeed, the victorious nation, concerned alike with the vanquished in the recovery of world economy, may have to contribute heavily from his own material resources in bringing that recovery about.

Hence the thought that the victor in war, even the defeated nation, might be better off, when it is all over, if the means of war were such as to produce casualties without the wholesale destruction of housing, factories and machinery, so difficult and costly to replace. This is not a pleasant thought but, for that matter, neither is any form of warfare. In our outlook on war, I feel we should be hard-headed in our assessments and give consideration to dollar costs, not only as to the waging of war, but in the postwar rehabilitation.

The field of chemistry offers promise of potent, relatively cheap weapons, essentially anti-personnel weapons which do not leave a wake of material destruction. It behooves all military men to give thought to these offensive possibilities. It is the business of the Chemical Corps to consider them along with ways and means of defense against them.

Alden H. Waitt

Major General, U. S. Army,
Chief, Chemical Corps

CHEMICAL CORPS

CARDED

History And Accomplishments Of The Chemical Corps

*by Major General Alden H. Waitt**

ON April 6, 1917, when the United States entered World War I, this country had no chemical warfare organization, no military gas masks or other provisions for dealing with gas warfare despite the fact that gas had been in use in the war for almost two years.

On the day that the United States declared war on Germany, a research committee was organized under the direction of the Bureau of Mines, and shortly thereafter the study of gas warfare in this country began. During the first half of 1918, there were five separate agencies of the United States Government more or less directly responsible for chemical warfare. The Bureau of Mines was charged with research and development, both offensive and defensive; the Medical Department was responsible for the manufacture and supply of protective materials and for the training of personnel in gas defense; the Ordnance Department manufactured toxic gas and filled chemical shell; the Signal Corps provided gas alarms; and the Engineers had special gas troops to conduct offensive operations. Obviously, such divided responsibility for chemical warfare was not effective, so on June 28, 1918, these various activities were combined into one service, the Chemical Warfare Service, National Army. This new service was charged with all responsibilities relating to research, development, testing, and procurement of toxic gases and gas defense appliances; the filling of gas munitions; all chemical warfare training; and the formulation of doctrine governing the employment of toxic agents. The Chemical Warfare Service, A.E.F., became the European Division of the newly established Chemical Warfare Service.

Though the Service was established at a relatively late date in the War, its accomplishments were impressive. The entire Army was provided with protective equipment and trained in defense against gas attack. Chemical officers were trained and placed on the staff of all army, corps and division commanders as specialists in both offensive and defensive gas warfare.

Prior to the Marne-Vesle operation, the First Gas Regiment fought with British forces and participated in the attack on Lens, during which attack 2,500 projector drums were fired and almost 40 tons of gas were hurled on German troops. This was the largest scale gas operation carried out by the Allies up to that time. During the Marne-Vesle operation and continuing through the St. Mihiel and Meuse-Argonne offensives that brought an end to the war, the Regiment supported both the Tank Corps and the Infantry. Using Livens projectors and Stokes mortars, the Regiment conducted 152 gas operations in which they fired not only phosgene, mustard, chlorpicrin and other toxic gases but also smoke and thermit, a liquid metal.

Equally outstanding were the accomplishments in the fields of research, development and supply. American protective equipment and training in defense against gas attack were so effective that less than two per cent of American gas casualties proved fatal. The U.S. forces were provided with approximately 6,000,000 gas masks; thousands of tons of decontaminating materials and protective ointment; and nearly 600,000 gas-filled shells. In addition, gas for filling 5,000,000 shells was shipped to France and Great Britain. At the time of the Armistice, gas for filling an additional 4,000,000 shells was on hand, and production had reached an annual rate of 42,120 tons—equal to the combined production of France and Great Britain and nearly four times that of Germany.

From a peak strength of 1,680 officers and 18,838 enlisted men in World War I, the Chemical Warfare Service was reduced, at one time, to a total strength of

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*Chief, Chemical Corps.

361 officers and enlisted men. The all-time low for officers was 60 and for enlisted men 280. As late as December, 1939, the total military strength of the service was only 917. In the meantime, Italy had employed gas against the Ethiopians, Japan was reportedly using it against the Chinese, and Hitler had abundantly demonstrated his total disregard for all international agreements.

At the time the United States entered World War II, the Chemical Warfare Service was charged with the responsibility for the research, development, procurement and supply to the Army of smoke and incendiary materials, all toxic gases and gas defense appliances, the supervision of the training of the Army in both defensive and offensive Chemical Warfare, and the operation of special gas troops. While the use of toxic gases was not initiated during the recent war, the enemies' capability was at all times beyond question, and their intention was uncertain until the very end of the war. There was, therefore, no alternative for the United States Armed Forces but to be continuously ready for all-out gas warfare. Such readiness was the responsibility of the Chemical Warfare Service. To this end chemical officers were trained and assigned as special staff officers at the headquarters of every theater, army group, army, corps, division, base command or base section, and to the command of each of the approximately 375 chemical units, air and ground, which were activated during World War II. By July 1945, a total of approximately 350 chemical units (4.2 chemical mortar, smoke generator, decontamination, processing, depot, base depot, maintenance, laboratory, composite, general service, air operations, air depot and air maintenance units) were employed in theaters of operation. The peak strength of the Chemical Corps in World War II was approximately 70,000 officers and enlisted men.

Undoubtedly the most famous of the Chemical Warfare ground weapons employed in the recent war was the 4.2-inch chemical mortar. Chemical Mortar Battalions armed with this weapon first saw action in the Mediterranean Theater in July, 1943, and two months later they went into action in the Pacific.

The first battalions landed in Sicily with a newly developed high explosive shell for their 4.2-inch chemical mortars in addition to their standard smoke shell. The mobile mortars were on the beach in the first waves of the assault and in action minutes later, laying massed fire with white phosphorus and high explosive on enemy troop concentrations, on pinpoint targets such as tanks, machine gun nests and pillboxes, and particularly on enemy weapons in defiladed positions. Thereafter the mortars moved with the Infantry up the boot of Italy and into Southern France. Four Chemical Mortar Battalions were employed in the Normandy campaign. Two of these went in with the assault on D-Day and supported the infantry until artillery could be landed and brought into operation. The battalion which landed on Utah Beach was the only "artillery" support of the 4th Infantry Division for six hours after the landing.

In the South Pacific, mortars were used in the drive from Guadalcanal up the ladder of the Solomons; in perimeter defense on Bougainville, were mounted on LCI's for approach assaults in the landings on Peleliu, Leyte and Okinawa, and again on LCI's, pounded the shore in the assault landings at Lingayen Gulf in Luzon.

Chemical mortar units were also attached to armored units, including cavalry groups, on numerous occasions. Since the mortar troops were equipped with neither motorized mounts nor any type armored vehicle, this type operation was very exhausting and hazardous, and chemical mortar units could not realize their true capabilities in this type employment.

That these were combat troops and elements of the attack and front-line defense is indicated by the fact that they experienced a higher ratio of men killed in action than any other branch of the Army except the Armored Cavalry, Infantry and air crew personnel of the Air Forces.

While the 4.2-inch mortar undoubtedly became the best known weapon of the Chemical Corps to the ground forces in World War II, it was only one of a thousand items of research which have been developed during the relatively brief history of the Corps. The scope of research necessary to carry out its mission has become ever wider with time, so that today, while the primary function of the Chemical Corps is still gas warfare, it has also become responsible for the research and development and the training of our Army in incendiary warfare and other special forms of warfare not delegated to other branches of the service. At no time, however, has the Chemical Corps forgotten for an instant the experience and lessons of gas warfare learned

A flame throwing tank does its stuff against a Jap position in the Southwest Pacific.

Signal Corps Photo

in the First World War.

When World War II began, it seemed only a matter of time before gas would be used in the conflict. As the only chemical service in our armed forces, the Chemical Corps was responsible for furnishing the Navy, Marine Corps, the Army Ground and Air Forces with equipment, personnel and training in this highly specialized form of warfare. In preparation for just this event, the Chemical Corps had developed four major items in the years between wars. The first of these was the rifled 4.2-inch mortar, which extended the range of the original smooth-bore Stokes mortar from 1,400 yards to 2,400 yards and vastly improved its accuracy. A shell had been developed for white phosphorus or chemical filling which had far greater capacity than any similar caliber artillery shell. The second item was a smoke and chemical spray tank for airplanes, making possible chemical attack from the air or laying quickly dense clouds of smoke for screening purposes, tactics unheard of in World War I. The third item was impregnated clothing, for protection against mustard gas; and the fourth was a fully molded facepiece for the gas mask, which replaced the awkward and uncomfortable facepiece used in earlier masks.

These were important developments but they were not enough, and to undertake the vast amount of research suddenly demanded by war, the Chemical Corps expanded its technical and scientific personnel from 300 to more than 5,000 people; built new chemical and medical laboratories in Maryland, new arsenals in Colorado, Alabama and Arkansas; and established new proving grounds and test installations in Utah, Mississippi, Florida and in the Panama Canal area. Special laboratories were established at the Massachusetts Institute of Technology, Columbia University and the University of Chicago, and field test units in Alaska, Canada, Great Britain, Australia, New Guinea, India and in the Philippines. The Chemical Corps turned for help with its special problems to the pool of mobilized technical resources in the Office of Scientific Research and Development. Results of basic research carried out under OSRD auspices were sent to the chemical warfare laboratories, industrial development laboratories and plants, to be turned into equipment, munitions and devices which the troops in the field could use.

In the first part of the war, the Chemical Corps concentrated on getting ready for gas warfare. Thirty-five million gas masks were made; civilian masks, infant respirators, service masks, assault masks, optical masks, and masks for hospital patients with head wounds. Gas masks for dogs, horses and even pigeons underwent further development and were placed in production. Collective protectors, eye shields, protective capes, hand decontaminating apparatus and 300-gallon decontamination trucks, bleach and DANC, greatly improved protective clothing, protective ointments, gas casualty and gas treatment kits and water treatment kits were produced on a large scale and shipped overseas to the theaters of operations to be ready in the event of the initiation of gas warfare by the enemy.

At the same time that research, development and production of defensive material was going on, the Chemical Corps also manufactured great quantities of the war gases. Chemical mortars, gas-filled mortar and artillery shells, bulk agents, chemical spray tanks and aerial chemical bombs were stored in the overseas theaters available for any eventuality. Bombs developed to carry chemical agents ranged from 10-pound mustard-filled bombs to 2,000-pound bombs for delivery of crash concentrations of nonpersistent toxic gases. Toxic smoke candles, thermal generators and a variety of grenades and rockets were also designed to carry chemical fillings. Thirty- and 70-gallon airplane spray tanks were available for spraying liquid gases, and large stores of chemical shell were prepared for the 75mm, 105mm, and 155mm artillery weapons. However, the most effective ground chemical weapon for gas warfare was the 4.2 mortar with its shell fillings of mustard, phosgene and other toxic agents.

The original 4.2 mortar was purely a chemical weapon for the firing of gas and smoke. As such, it would have had limited usefulness for our ground forces in the absence of gas warfare. But in 1942 the Chemical Corps developed a shell in which the chemical or smoke filling was replaced by eight-and-one-half pounds of TNT, representing almost 35 per cent of the total weight of the round, an extremely high loading efficiency for any munition. The range of the mortar was steadily advanced from 2,400 yards to 3,200 yards to 4,400 yards as continual improvements were made in the powder charge, ignition and in the structural features of the weapon. In combat, despite these authorized ranges, missions were fired at ranges up to 5,000 yards. While capable of these extreme ranges, the inherent accuracy of the weapon and short minimum range of less than 600 yards enabled the 4.2 mortar units to walk the fire safely to within less than 100 yards of our front-line troops, a feat that proved most useful in perimeter fighting in the jungle.

From the standpoint of strategic operations, the most important chemical munition was the incendiary bomb. In 1941 the only standardized aerial incendiary in our Army was a 100-pound gasoline-filled bomb. When the war ended, the Chemical Corps had developed a two- and four-pound magnesium bomb, a six-pound Napalm bomb, a 10-pound pyrotechnic gel bomb, the 100-pound jellied oil bomb, and the 500-pound pyrotechnic gel bomb. Each designed for a specific fire mission, the Napalm filling was an aluminum soap-thickened gasoline mixture, jellied oil was a synthetic rubber-like inflammatory composition, and pyrotechnic gel consisted of magnesium fines and kerosene in an asphalt matrix. Almost 260 million of these incendiaries were procured for use by the Army Air Forces. Aerial incendiary warfare, initiated over Germany, hit its stride in the Pacific theaters where it was on such a large scale that Chemical Corps Air Operation Companies at Air Forces bases worked around the clock on three-shift schedules loading clusters into the bomb racks.

Where streamlined incendiary bombs, their special fillings, and their effective employment were products of long research and experimentation, the fire bomb as a tactical incendiary was developed from a field improvisation when fighter pilots dropped their spare jettisonable wing tanks and ignited the splashed gasoline with tracer bullets. When the Chemical Corps attached white phosphorus grenades to the tank and substituted Napalm as the incendiary filling for the high octane gas, the fire bomb promptly graduated from a field expedient to a finished munition. Almost 40,000 fire bombs ranging in capacity from 30 gallons to 300 gallons were dropped on point targets in Europe and in the Pacific.

Of the smaller type incendiary weapons developed for the use of ground troops, perhaps the most widely known was the white phosphorus grenade. Although white phosphorus was originally developed as a smoke material and was used in bombs, artillery shell and the 4.2 mortar shell principally to build smoke screens, the splatter of burning particles as the white phosphorus grenade bursts made it an excellent antipersonnel weapon for the throwing arm of our troops.

The most effective weapon in the United States Army for dealing with the Japanese log and coral bunkers and caves was the flame thrower. The portable and mechanized flame throwers saved countless American lives in the Pacific. The Germans had introduced this type weapon in World War I, and it was employed both by the enemy and our own forces. The results were generally unsuccessful, and it was held in general disrepute in the American Army. For this reason the Chemical Corps was not allowed, prior to 1941, to pursue research and development in this field. Early in 1941, however a development program was begun and a new portable flame thrower was standardized in the following August. Just before Pearl Harbor a contract was let for 1,000 of these comparatively new weapons.

After successful demonstration against Japanese defenses on Guadalcanal, development of the flame thrower was given top priority and new models, new firing systems and more important, new fuels were devised. The gas and oil composition first used created a great billowing cloud of flame and smoke that enveloped the target but couldn't penetrate it. With Napalm-thickened fuels, however, a rod of fuel was projected which would enter the portholes of the bunker.

The mechanized flame thrower, mounted either on the M-3 medium tank or the tank destroyer, saw more action in Europe than did the portable flame thrower. Ground commanders liked the armored protection afforded operators of the tank-mounted flame gun, and the flame-throwing tank added a new and special weapon to the modern armored force. With a much larger fuel and propelling system mounted in a tank, the mechanized flame thrower had far longer burning time and considerably more range than the portable weapon.

The flame gun originally designed for tanks was fixed in the bow machine-gun mount. Later, at the request of the Armored Forces, a periscope-mount flame gun was designed which did not require replacement of tank armament. However, the limitations of this auxiliary flame thrower in duration of fire and range pointed up the superiority of the main armament type flame gun, and new armored vehicles specifically designed for flame operations and carrying the latter type flame thrower, were under development at the end of the war. The principal employment and much of the development, especially of the mechanized flame thrower, took place in the Pacific Theater.

The importance of the flame weapon in armored operations is indicated by the increasing use made of these special tanks in the Pacific war. Auxiliary mechanized flame throwers, complementing the tank's standard armament, numbered six on Guam, 10 on Luzon, 42 on Iwo Jima and 72 on Okinawa. Main armament tank flame throwers, installed in the main gun port of the light and medium tanks, numbered 24 on Saipan and Tinian, six on Peleliu, 10 on Leyte, eight on Iwo Jima and 54 on Okinawa.

Typical of a mechanized flame thrower operation was the attack on Rocky Crags near Hill 178 on Okinawa. From caves, pillboxes and concrete emplacements built into its sides, an enemy force of almost 300 Japanese clung tenaciously to the 450-foot coral hill. The attacking elements of the 17th and 184th Infantry Regiments, encountering fire from rifles, light and heavy machine guns, 50mm and 81mm mortars and knee mortars, together with the 75mm and 15cm artillery, had taken the ground approaches to the Crags, but

Armed with a Chemical Corps flame thrower an infantryman on Iwo Jima advances into the mouth of a cave suspected of housing Japs.

Signal Corps Photo

progress was slow and perilous. On the fifth day of the attack, April 24, 1945, the tanks were called up, and an infantry battalion, supported by 105s and 60mm mortars and with 18 standard tanks and six flame tanks, was given the job of securing the Crags. Advancing toward their objective, the flame tanks opened up as soon as they came within range, repeatedly flooding nearly the whole peak with liquid fire. Resistance broke in the face of the flame attack and infantry assault platoons, following the tanks, moved up the Crags and finally took the position.

In other assaults in the Pacific, where the jungle was impenetrable to the foot soldier or where the construction of cave and bunker defenses was too intricate or massive for team assault, the mechanized flame thrower was called on to clear the way. When infantry advances disclosed enemy positions, armored bulldozers, supported by tank and infantry fire, prepared a road to enable the flame tanks to advance on the stubborn positions.

An emplaced flame thrower was developed for use on airfields against airborne landings by the enemy. The aeroflame, a flame thrower mounted on a plane, proved to be practical enough but was not required because the jettisonable fire bomb could do the same job better.

The wartime development of smoke screening devices and tactics by the Chemical Corps represented a tremendous advance over those employed in World War I. In addition to the bursting-type smoke agent, white phosphorus, screening smokes were also produced with HC (hexachlorethane) mixture, a burning-type agent; FS (sulfur trioxide-chlorsulfonic acid), a liquid for spraying; and steam and crude oil which produced an artificial fog which was extremely stable.

Smoke shells and hand grenades, smoke pots, a 30-pound and a 100-pound smoke bomb, and the smoke spray tank were available for dispersing these agents when war began, but smoke rockets, signal smokes, smoke rifle grenades, base-ejection shell, and the aerosol mechanical smoke generator were all either wartime developments or were items radically improved during the war.

A U.S. Chemical Company covers an area in France with smoke.

Signal Corps Photo

A whole series of colored smokes, in red, yellow, orange, green, violet and black, were devised as fillings for hand and rifle grenades and rockets. Other signal devices were the smoke marker and the smoke streamer bomb, used principally in parachute deliveries and as target markers.

White phosphorus shell was filled for the mortars, guns and howitzers of the infantry and artillery. White phosphorus shell fired by the 4.2 mortar alone totaled over a million rounds.

While these munitions and devices provided means for laying tactical screens, the development of long-range bombers which could fly far behind the combat zones to attack our strategic installations raised a new problem in smoke operations. To provide large-scale concealment for such installations—the cities, harbors, factories and marshalling yards where the materials of war were being manufactured or assembled—an artificial fog was necessary.

Soon after the attack on Pearl Harbor smoke generator units, equipped with stationary oil generators, were organized for the protection of critical areas and installations in the United States. These units were able to completely obscure large areas within 20 to 30 minutes—but this was too slow. Consequently, NDRC personnel working with the Chemical Corps soon produced a mechanical fog oil generator which emitted a greater volume of more durable smoke in less than half the time required by previous generators. These were rushed to the North African theater where, along with smoke pots, the ports of Oran, Algiers, Bone, Bizerte, Palermo, and Naples were screened with amazing success. These ports were completely obscured within 10 minutes after the "make smoke" order was given and rarely, if ever, did the enemy air force hit a target when so obscured. This type employment of smoke was not "in the books" prior to 1942.

Another use of smoke which was not a part of prewar doctrine was large area screening in front-line areas. Chemical officers, however, were soon faced with the critical demand for protection of American troops and supplies on beachheads, in river crossings, bridge construction, troop concentrations and main supply lines near the front. Smoke screens on the Salerno and Anzio beachheads, at the crossing of the Volturno, the Meurthe, the Roer and the Rhine rivers, and numerous screens for Engineer bridging operations saved literally thousands of lives and vast quantities of indispensable matériel. The extent to which smoke generators were employed is indicated by the fact that more than 12,000,000 gallons of fog oil were expended in the Mediterranean and European theaters.

Research and testing have from the very first been primary considerations of the Chemical Corps. Of comparable magnitude, however, was the training mission of the Corps. Preparations for gas warfare were not complete with the manufacture and distribution of toxic agents, protective equipment and the deployment of chemical troops. In addition to the training of all personnel under its own jurisdiction, the Chemical Corps was responsible for supervising the training of the personnel of all other branches of the Army in defensive and offensive chemical operations. The object of this training was to insure that every individual was proficient in the use of his defensive equipment and that all chemical units and the command elements of pertinent ground and air organizations were prepared to wage all-out offensive gas warfare.

The chemical warfare schools also trained selected officers of the Navy, Marine Corps and Coast Guard, as well as civilian instructors for the Office of Civilian Defense. During the 18 months following the attack on Pearl Harbor when enemy air raids on the continental United States were considered possible, if not probable, the Chemical Corps conducted seven War Department Civilian Protection Schools which qualified more than 10,000 men and women in home front incendiary and gas defense.

It should be emphasized that Chemical Corps units and personnel were so trained that they were capable of being continually employed in non-gas warfare. All types of chemical units except decontaminating companies operated either full-time or part-time in the performance of their primary mission.

Decontamination units, with their 400-gallon tank trucks, carried water to thirsty outposts, furnished showers for soldiers at the front, pumped out flooded dugouts and served as auxiliary fire fighting companies. The 400-gallon "decons" were constantly in demand everywhere and were one of the most popular pieces of equipment produced, although never used for the purpose for which they were designed. When more smoke units were needed for port screening, decontamination companies were diverted to smoke generator operations.

Processing companies not engaged in their primary mission operated chemical depots, performed maintenance, did dry cleaning for the Quartermaster, manufactured ice cream for the Red Cross and were employed in numerous other activities.

Laboratory companies, set up to analyze and identify chemical agents and munitions used by the enemy, also developed new camouflage paints and dyes and, in the Pacific, prepared greatly needed quinine tablets and converted antimustard bleach powder (hypochlorite) for the purification of water. One chemical laboratory company converted khaki uniforms into jungle suits for the Buna Campaign, tested tent-preserving compounds for the Quartermaster, prepared solutions for reproducing Engineer maps, and manufactured a rust-inhibiting solution, the lack of which threatened to ground planes in the Southwest Pacific in 1942. Frequently, the Chemical laboratory companies were the only science laboratories available, and all branches of the armed forces utilized their services.

Today, research, training and procurement planning are the principal concerns of the Chemical Corps and are the cornerstones of a peacetime program which is designed to keep the U.S. Armed Forces second to none in the application of chemistry in modern warfare. At the Army Chemical Center at Edgewood, Maryland, research goes forward in toxic agents, defensive equipment, incendiaries, screening smokes, the flame thrower and the chemical mortar. Its toxicological and medical laboratories work to devise improved medical protection against new toxic substances, as well as treatment of injuries due to chemical agents. New products from the chemical, mechanical and medical laboratories which appear to have possible military application are tested at Edgewood Proving Ground, Dugway Proving Ground, and at the jungle test station of the Chemical Corps. Tactical doctrine governing the employment of chemical weapons and munitions is under constant study and field testing to assure that the Armed Forces are at all times ready to cope with any possible development in the field of chemical warfare.

Not the least of the many products of wartime research and development are the peacetime applications which can now be made of materials of war. The highly improved smoke devices and the new mechanical smoke generator provide economical means of laying ground fogs to protect crops from frost. The smoke pot and smoke generator, as well as the airplane smoke tank, have been used to disperse insecticides where orchards, grain fields and row crops are imperiled. Flame throwers have been used to destroy water vegetation which impedes river navigation, and a modification of the weapon known as the flame cultivator has been manufactured as a new implement of the farmer in his war against weeds.

To overcome the short range of the standard police tear gas grenade used in riot control, the Chemical Corps has devised a plastic sphere the size of a baseball, to permit easier handling and to achieve greater throwing distance and accuracy. Gas masks, permeable and impermeable clothing, and cellophane capes developed for gas warfare can provide new safety for industrial workers handling hazardous chemical agents.

One of the gas protective compounds investigated by the medical laboratories as a defense against arsenical poisoning has proved extremely successful in the treatment of a variety of metallic poisonings. Another substance is being studied for its protective effects against cyanide poisoning, which like metallic poisoning is an occupational hazard in many industrial processes. Two new toxic compounds, once considered as potential war gases, are now being tested for possible use in the treatment of certain diseases. One, developed as a nerve gas, appears to have some value in the treatment of glaucoma, an eye disease. The other, the nitrogen mustard series, are being tried for certain types of cancer and may become useful research weapons in the hands of medical scientists.

CARDED

The Navy And The Atomic Bomb

by Walmer Elton Strope★

Condensed from *U. S. Naval Institute Proceedings*

THE first of July dawned bright and clear. As thousands watched, the morning air over the lagoon of remote Bikini Atoll was made even brighter by the flash of the fourth atomic bomb, an important event in Operation Crossroads, most vital of scientific experiments in the history of the United States Navy. Those fortunate enough to witness this culmination of months of technical planning viewed the awesome spectacle of the unleashing of nature's most intimate and terrible power. Some of us there received a second, more subtle impression in the weeks that followed; for it soon became apparent that the flash of the Able Day bomb had rendered bright and clear much of the darkness and uncertainty which had shrouded the future of the United States Navy.

The future of the Navy is of primary interest not only to those of the naval profession but to every citizen of our country. The Navy has been traditionally America's "first line of defense" and for generations has been largely instrumental in protecting the Western Hemisphere from the destruction which accompanies modern war. It is entirely reasonable, therefore, that men should feel concern over that which has been their protection in the past and should seek to know what parts, if any, of this protection system are able to survive the changed conditions brought about by great advances in scientific and technical warfare.

This concern is well-founded. We stand today on the threshold of the atomic age. Atomic explosives and power, supersonic rockets, television, and radar threaten to bypass the conventional duties of the Navy. Command of the sea takes on a different aspect. The traditional naval role of carrying the fight to the enemy's shores encounters new problems. The advent of guided missiles means another new weapon which must be considered. Some people, then, are asking how we can justify the continued existence of the fleet?

All sane persons must favor a strong international control system for the prevention of atomic wars in the future. It is widely held that the terrible havoc of an atomic conflict might hurl present-day civilization hundreds of years into the past, if not eliminate it altogether. Such an end is certainly not to be contemplated by thinking men. Yet, despite this, we must face the possibility, or even probability, that the necessary controls will not be authorized. Nations jealous of their traditional sovereignty and governments which are wont to use force as a bargaining agent may combine to stall effectively the will of the people of the world.

It was from considerations of this kind that Operation Crossroads was deemed necessary in the eyes of those responsible for the Navy and the defense of the Nation. If defense plans must be based on the use of atomic weapons, one of the most immediate problems is the determination of the destructive power of these weapons in naval warfare.

It is true that some supposedly responsible persons claimed that the experiment was not necessary since the effect of the bomb on naval units could be calculated, using existing data. To competent naval designers it was obvious that these people had no conception of the problems involved. That they were wrong in their assertions that damage to naval vessels could be predicted was amply demonstrated by the results of Tests Able and Baker.

On the contrary, Operation Crossroads was most necessary. Many important facts of a technical nature regarding the effect of atomic detonations on naval vessels were learned at Bikini. All of these facts are, quite naturally, classified confidential or secret and are likely to remain so. However, the broad results as released to the public through press releases and the reports of the President's evaluation board were all that is necessary to reorient our thinking on the future of the Navy.

One of the most obvious conclusions which may be drawn from the extensive tests conducted at Bikini may be stated thus: *The atomic bomb is not at present, nor will it be for some time to come, a practical weapon for use against a fleet at sea.* One does not need special technical training to reach this conclusion and, indeed, it has been stated in public print many times since the

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★Architect, Bureau of Ships, Navy Department.

tests at Bikini. The reasoning leading to this statement is fairly simple.

Fundamentally, the question of whether the atomic bomb is effective against a fleet at sea can be reduced to the question of whether the bomb is a "multiple target" weapon where the targets are naval vessels. In other words, if an atomic bomb is dropped in a task force disposition, can it be expected to sink more than one major vessel? If not, it can be shown that the task of destroying a fleet can be made so costly that either the cost is prohibitive or the bombs may be used to better advantage against other targets. Operation Crossroads demonstrated that the destructive power of the atomic bomb is much less at sea than it is over land. Nearly everyone is familiar with the tremendous damage done at Hiroshima and Nagasaki—all structures destroyed over an area of nearly three square miles. This has been regarded as the area of "total destruction." On the other hand, the Joint Chiefs of Staff Evaluation Board for the Atomic Bomb Tests reported that the radius of critical damage was something less than half a mile. This figure can be arrived at by other means. For instance, it has been announced that in both tests there were 40 vessels within a mile radius, and 20 within a half mile radius of the bomb detonation. There were but five ships sunk in the first test, and only 11 of all descriptions in the second test. Since those sunk were among those closest to the bomb detonation, it thus appears that the area of "total destruction" was less than that encompassed by a circle with a radius of a half mile. Such a circle has an area of 0.785 square mile, or only about one quarter of that reported in the destruction of the two Japanese cities.

There are several reasons for this phenomenon. Some, of course, may be purely physical reasons, a difference in the reaction of the atomic blast on solid and liquid surfaces. That possibility is no doubt being studied. One of the obvious limiting factors at sea, however, is the structure of the targets. Naval vessels are engineered structures specifically designed to resist not only the great strains imposed by storms at sea and the tremendous shock of their own gunfire, but also the pitiless blast of enemy torpedoes and bombs. They are war machines. It is only too obvious that laymen and non-naval scientists prior to Bikini grossly underestimated the innate resistance of our naval vessels to damage. Operation Crossroads proved that ships, even lowly transports, are immeasurably superior to any normal land structure in this respect.

Much of the damage at Hiroshima and Nagasaki was attributable to fires. Here, again, is a threat to which naval vessels by design are highly resistant. They are aided in this respect, of course, by the proximity of fire's greatest enemy, water. So it is not surprising that the radius of destruction within a task force is sharply reduced from that observed upon cities and other land installations.

We cannot lose sight of the fact that at Bikini each bomb sank several vessels (although only the second caused the loss of capital ships), and therefore was, in effect, a "multiple target" weapon. However, the target arrays were condensed into an extremely small area compared to that occupied by a normal task force disposition. Twenty vessels were jammed into a half mile radius during the tests, while a normal wartime cruising disposition often has vessels situated at 1000-yard intervals. It thus appears that under actual sea conditions even the cataclysmic upheaval of the atomic bomb can wreck only one or two vessels at the most.

In the above discussion we have not mentioned the most peculiar and most deadly of the effects of the atomic bomb; that which sets it apart from molecular explosives—radioactivity. Radioactivity is a phenomenon new to warfare, with many technical ramifications. It is not necessary to consider here these ramifications, the data on which has not been released. It suffices to consider the general effect of radioactivity as represented in reports both of Bikini and the bombed Japanese cities. In all these reports, it will be noticed that the area surrounding the detonation for several miles was rendered uninhabitable for a considerable period of time. In Japan, people within these poisoned areas sickened and died. On land, the radioactivity remained dangerous for several weeks, although limited stays in the affected areas could be made without harm. After Test Baker, the vessels anchored in the lagoon were drenched by radioactive rain thrown up by the blast. They steeped in this radioactive bath for several days before efforts could be made to decontaminate them, and it was found that they remained radioactive long after the water in the lagoon had become relatively safe. Inspection of some of the target vessels was held up for several weeks. It must be concluded, then, that one of the most important effects of the atomic bomb is that a large area surrounding the explosion is poisoned and made uninhabitable for a long time by radioactivity.

Land installations and non-mobile naval installations such as shipyards, anchorages, and so on would feel these effects most strongly. It may be quite possible to protect such installations from the blast and heat of atomic missiles by burrowing deep into the earth or constructing heavy concrete defenses similar to the German submarine pens of the recent war, but all this work is made useless by the radioactive particles released by the atomic bomb, which sift down through the minutest openings and make the protective shelter itself a radioactive "oven."

A fleet at sea, on the other hand, is not particularly vulnerable to the attack of radioactivity. All vessels not actually sunk or completely immobilized by the blast of the bomb can clear the radioactive area in a very few minutes, and it is almost certain that such action would result in largely neutralizing the threat of radioactivity. Thus we find that not only is the destructive power of the atomic bomb considerably reduced when a fleet at sea is the target, but the radioactivity engendered by the bomb is also made relatively ineffective by the mobility of the task force. This is the basis of the contention that an attack with atomic missiles which would neutralize or destroy a city or military installation would be relatively ineffectual against a fleet at sea.

Few people realize what vast "resources of defense" are available to the Navy. Further, the fleet is almost completely uninhibited in the application of these defensive measures, no matter how radical, freely altering ship design, logistics, tactics, and even strategy to accomplish the desired end.

Consideration of the above facts has caused the atomic bomb to be labeled a failure in some quarters. The atomic bomb was not a "flop" at Bikini. One has only to view the motion pictures of one of the detonations to realize that an explosion of such violence and magnitude could hardly be called a failure.

For those who expected the atomic bomb to prove itself as a multiple target weapon the Bikini tests were indeed disappointing but the bomb's destructive power against a single vessel was not. It seems quite obvious from the information which has been released that no naval vessel existing today can survive a direct hit or very near miss from an atomic bomb of the type demonstrated at Bikini. As a matter of opinion, it is extremely doubtful whether any floating structure could be designed to survive a direct hit by an atomic bomb and still retain its ability to perform the functions of a naval vessel.

Conventional naval design is based upon the capital ship as the highest type of naval vessel, capable of absorbing a maximum amount of punishment and still remain a fighting ship. A capital ship is expected to absorb multiple hits from any weapon without sinking. Yet, it now appears that no vessel can survive even one hit from an atomic weapon. Hence, much of the protection now a part of capital ships may prove superfluous, and the devotion of weight to this protection uneconomical in the design. This weight might better be devoted to increasing the speed, the range, or the offensive power of the vessel. Too, smaller vessels may prove to be the best solution under the new conditions.

Another important lesson of Operation Crossroads was learned which will result in great changes in the Navy as we know it today. The tests at Bikini illustrate graphically what will happen to a fleet caught at anchor as the United States Pacific fleet was caught at Pearl Harbor. Not only would physical damage be widespread as the result of the relative crowding of the vessels in the anchorage, but radiation poisoning of the base would prevent effective control of the damage and delay salvage operations. The naval base itself, consisting of shipyards, drydocks, supply depots, ammunition depots, barracks, hospitals and so on, would be even more vulnerable as indicated by the destruction in Hiroshima and Nagasaki. Therefore, the navy of the atomic age must avoid at all costs the possibility of annihilation within its bases. In order to prevent such a disastrous eventuality, it will be necessary to maintain a large portion of the fleet at sea at all times to avoid the possibility of a surprise attack. This portion of the fleet, whether it be one-half, one-third or a smaller portion, must be able, independent of its bases, to carry out the required retaliative measures. Not only must the task forces at sea contain adequate offensive power to perform the Navy's defensive functions, but they must be able to steam the necessary distances and remain at sea the necessary time to accomplish their missions, even at the end of a protracted cruise, without the necessity of returning to their bases. These bases would undoubtedly be among the first targets of a surprise attack. These requirements indicate that the naval vessel of the future must have a great radius of action and extraordinary sea-keeping abilities. Rapid development and use of the most modern types of power plants, perhaps even atomic power itself, is indicated. What form the future naval vessel will take is quite impossible to state, but it is certain to be the principal occupation of a great many minds for some time to come.

For that matter, the development of atomic weapons will, no doubt, occupy as many minds. The atomic bomb in itself has received so much publicity that one is liable to overlook the fact that the incorporation of the atomic explosive in a gravity bomb was merely an expediency of war; merely the simplest method of accomplishing the immediate end. We may look forward to the employment of the atomic explosive in more versatile weapons, such as the rocket-propelled guided missile and, possibly, the torpedo and mine. Elaborate systems for homing these lethal missiles to their target will be developed. Against these threats, countermeasures will undoubtedly be sought to detect and immobilize or destroy the attacking weapon at a safe distance. Perhaps devices will be perfected to detect at great distances the existence of the atomic explosive itself.

All of these developments will affect ship design profoundly. Certain ship types may disappear and perhaps be replaced by new types. There is the possibility that surface vessels and submarines may be merged, creating a more versatile navy capable of operating either on or under the sea. Gunnery, as we know it, will be replaced by rocket-launchers and other devices which will increase the striking range of the Navy tremendously. All of which indicates that under the impact of the unrestricted use of new scientific discoveries, the character of the United States Navy will be changed at least as completely and rapidly as it was 75 years ago when the rifled gun, Krupp armor, and steam engineering banished the age of sail into the pages of history.

But another and more vital question remains unanswered. Is it not probable that the impact of the new scientific discoveries mentioned above might eliminate the Navy altogether rather than merely alter its character? There are many who believe so and cite in support of this contention, the present progress toward long-range rockets which some day might enable a belligerent nation to attack and destroy any spot on the globe, however far removed, and thus eliminate the need for an intermediate agency, such as a navy, to carry out de-

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fensive and offensive measures against distant shores. Further, is it not possible that the future atomic war may be decided in so brief an interval of time that the traditional concept of "control of the sea" will lose most of its meaning? It is the thought of this brief and terrible "push-button war" which has struck terror in the hearts of peace-loving peoples and has created the widespread feeling of distrust in existing means of defense.

The atomic war of the future has been dubbed "push-button" warfare because of the variety of novel mechanisms which science has recently introduced into warfare. We envisage a type of warfare in which the human agencies are far removed and the actual attacks are accomplished by means of robot projectiles guided accurately from a remote point of origin and loaded with devastating atomic explosives. The industry, transportation, government and, indeed, the whole civilian populace would be the targets. No principality, large or small, would be immune to these globe-girdling atomic weapons. A single, swift, overwhelming attack might destroy immediately a great nation's will, and even ability, to resist.

Thus the "push-button war" appears to be independent of all the moral, material, and economic factors which traditionally have influenced war and peace. Push-button warfare is the ideal tool of tyranny and aggression. By its use, the possibility of maintaining the personal liberty of the individual seems hopeless. In the past, totalitarian demagogues have been held in check, or at least, strongly influenced by the realization (fortuitous for freedom) that the democratic world possesses the preponderance of natural resources, industrial development, and manpower in the world today. It takes no imagination at all to reach a conclusion as to who would push the button first when the opponents are democracy and totalitarianism.

We learned at Bikini that the Navy is the logical place to "strategically distribute" the weapons required to assure retaliation in event of attack, because even in its pre-atomic age condition it is the least vulnerable of all our defenses. This ability to retaliate in kind would thus replace the traditional economic and material factors as the restraining influence against aggression. If the existence of an adequate "atomic" Navy means that the aggressor who seeks to destroy our cities with atomic weapons may expect his own to be destroyed instead, it is quite possible that destruction will be withheld, with neither side caring to begin the use of atomic weapons, so that atomic warfare might conceivably be relegated to the limbo of stalemated weapons, along with poison gas and other "outlawed" weapons.

Certainly the great nations who have the necessary natural resources, who have the economic and material factors which influence war on their side, would be reluctant to involve themselves in the uncertainties of atomic warfare.

Our policy, then, in a world without an effective international control of atomic weapons, should be to "speak softly and carry a big stick." Our big stick is an atomic Navy, maintained as the greatest in the world.

The task will not be easy. The foundation is there: a victorious and efficient navy. Our Navy is familiar with great responsibilities, geared to vast undertakings and rich in the "know-how" of defense. Even in its present state, it is the least vulnerable of all our defenses to the atomic threat. Upon this foundation must be erected a new and invincible bulwark to the designs of an aggressor. We must remake the Navy to fit the atomic age, even as it was remade to fit the machine age.

Fortunately, the time in which to prepare our defenses is available. We are not threatened with atomic destruction tomorrow. Spokesmen for the armed forces have recently assured us that the perfection of the devices required for "push-button" warfare is still a decade or more in the future.

Of immediate importance is the planning of an efficient atomic Navy. Atomic weapons must be designed suitable to be carried at sea. Vessels must be planned to accommodate the new weapons. The technical lessons learned during Operation Crossroads must be applied to make the new fleet even less vulnerable to attack. Research facilities must be expanded. Much study is required in such fields as the response of ship structures to high impact loadings, the shock-mounting of vital equipment, and the reduction of fire hazards aboard fighting ships. Investigation of methods of protecting personnel from blast and lethal radiation will have to be undertaken. Energetic development of more efficient and less vulnerable means of propulsion is necessary. All of these projects are in addition to the more obvious programs of research and development of atomic weapons and countermeasures.

Even more important is the actual construction or conversion of naval vessels embodying the most advanced plans and ideas. Research, in itself, is almost meaningless unless it is transformed into a practical reality. Indeed, many types of research cannot be undertaken unless a building program is present to sustain and encourage them. Shipyard personnel must be trained in the techniques of construction and maintenance of the new equipment. Many novel features must be tested in service to determine whether they perform as anticipated. It is possible that completely new ship-types will be presented to the forces afloat for training of personnel and development of new tactics.

The building of an "atomic" navy will take time. It will also take money. It would be a signal disaster if the Congress permitted an "economy drive," however well-intentioned, to nullify the lessons learned at Bikini. Such action would sabotage this country's defenses at a most crucial moment.

The Congress, by and large, reflects the will of the people; and since this is so, efforts must be made to acquaint the people with the dangers of excessive reduction of the nation's defenses. Further, they must be apprised of the vital "rebuilding" of our defenses that has been necessitated by the new weapons of the atomic age.

WE MUST LEARN TO STOP TANKS*

So far the Marines have not had to face much in the way of enemy tanks. However, future operations may be against a tank-wise enemy; therefore, according to this article reprinted from the *Marine Corps Gazette,* the Marine Corps must be ready to counter armored attacks with effective antitank weapons.

by Lieutenant Colonel Arthur J. Stuart

WE MARINES are inexperienced in antitank warfare. Unless we devote our attention to learning that which we haven't had the opportunity to learn by experience, it may cost us dearly the moment we engage a non-Japanese enemy. Some time between the final shot on Okinawa and the next D-Day of the future, we must learn how to stop hostile tanks.

This serious deficiency in our combat experience and fighting know-how has come about naturally enough. Our erstwhile Pacific enemy injected many new weapons and tactics into the fight; but tanks worthy of the name and armored tactics were not among them. Although tanks and armored warfare were recognized major factors in the military doctrine of all other nations, the Japanese could not, because of peculiar limitations of their national economy, manufacture and place in the field modern armored equipment in other than negligible quantities. Thus, more or less through inadvertence, we marines are probably the only contemporary military organization that has never had to face a strong tank attack. With so much else to worry about during the desperate Pacific fighting, marines quite properly gave the problem little, if any, thought. Without the impetus of necessity and with our attention absorbed in more pressing problems, we have let the antitank field lie generally dormant.

But the battles of the past have been won. And today we must prepare ourselves to fight . . . and to win . . . the battles of the future, under the conditions of the future! This sobering task demands that we search for our weaknesses (for what was not a weakness three years ago may be one today), honestly admit them to ourselves, and apply ourselves to achieve their deliberate elimination. We have much to do. And among that which is most pressing is the job of adapting our amphibious technique, and otherwise readying ourselves to fight an armor-strong enemy.

What is the nature and importance of the thing we must learn to protect ourselves against, the hostile tank attack? What is the likelihood of our having to face it? In order to evaluate the importance of the antitank field, let us, for a moment analyze the tank, for the two are inseparably connected.

The tank is today a triple-threat weapon. It is a powerful infantry support weapon; it is the dominant ground weapon of exploitation; and it is one of the most important of all antitank weapons.

The tank has become an invaluable infantry support weapon. It is a favorite of infantry, for it provides the closest of all supporting fires. It physically accompanies the infantryman, shares his experiences, sees what he sees, and helps him during the infantry assault, still the most grueling and dangerous feat of all warfare. The tank destroys or neutralizes the enemy's direct fire weapons, those weapons which pour aimed fire into the infantry. As tank-infantry communications and the technique of tank-infantry coordination were improved during the course of the last war, the power of the tank-infantry team increased several fold. In Europe, the last war closed with millions of infantry and thousands of infantry tanks moving on both sides. One U. S. Army infantry officer, in a recent analysis of infantry action in the European Theater, wrote that decisive infantry action seldom occurred except when tank-led! And it is today the well-established doctrine of all military powers to concentrate infantry tanks in great strength as a battering ram of steel to spearhead the infantry main effort. Thus tanks have become a normal and important part of decisive infantry action. Indica-

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★*Marine Corps Gazette,* October, 1947.

tive of the importance of the infantry tank, our Army recently announced its new postwar infantry division (war strength) with 150 organic tanks!

Commencing with the lightning panzer operations in Poland at the outbreak of the recent war, the tank became the major ground weapon of exploitation. It continued in that role throughout the long European War until Allied armored drives from the East and West into the German homeland brought final victory. While current doctrine calls for infantry, assisted by infantry tanks, to effect a breakthrough, it also calls for commitment of armored units through the breach against deep objectives of major importance. Such armored exploitation operations are the logical follow-up of the breakthrough and have as their goal the expansion of the local victory into a sweeping victory of many fold importance. The U. S. Army's new armored division (war strength) with 340-odd organic tanks, reflects the current importance of the tank as a weapon of exploitation.

By the close of the last war the tank had been assigned a third important role. It had excelled and replaced the tank destroyer as the standard heavy, armored, self-propelled antitank weapon. The tank destroyer evolved as a type when tanks were still armed with relatively light guns. The heavily gunned, lightly armored, faster tank destroyer was in concept designed to destroy tanks by seeking and maintaining optimum long ranges beyond effective range of tank guns. But as tank development produced heavier tanks with ever more powerful guns, the point was reached well before the close of the last war where tanks could effectively engage tank destroyers at ranges up to the maximum limits of visibility. This spelled the doom of the tank destroyer, for it had lost its basic advantage over the tank and had lost its ability to execute its basic tactical role. Thereafter the tank destroyer engaged tanks at a great disadvantage and the tank became the logical successor to its role. When it did so, it became a major antitank weapon, for of the whole family of direct fire antitank weapons, the heavy antitank gun accounted for more tank casualties than did all other types combined during the last war. Statistical analysis of tank casualties of the European Theater further shows that the self-propelled antitank gun was several times more effective than towed guns, and that armored antitank guns were far more effective than unarmored.

Such was the importance attained by the tank in its three major roles by the end of the last war. Postwar tank design continues to achieve rapid progress in increased gun power and fire control, greater mobility, and better armor protection. In addition to such inherent improvements in the tank itself, broader developments of warfare indicate a future role of increasing importance. Common sense and published data on atomic explosives indicate that fully armored vehicles have characteristics which tend to reduce the effects of concussion, flash-flame, and radiations—the principal characteristics of atomic explosives. Further, it is felt by many that full-scale atomic war would place greatly increased strategic and tactical emphasis on mobility.

VT fuzes, when perfected for general employment by artillery, mortars, and other weapons, will tend to radically reduce the protection afforded by the familiar foxhole and trench, but will have little effect on the fully armored vehicle except perhaps to afford it a curtain of close-in protection. One must ponder this for some time for its significance to be fully felt. Armor may well increasingly provide much of the protection hitherto taken for granted in the ground.

The foregoing current trends but add to the tank's already prominent position. We have seen the increased emphasis on armor reflected in the U. S. Army's postwar infantry and armored divisions. The trend is the same in foreign armies. Let us consider, briefly, the Red Army, for it is today probably the most experienced military organization in the world in both tank and antitank warfare. The Red Army has placed ever-increasing emphasis on the tank arm. Its major infantry breakthrough operations of the recent war were led by concentrations of thousands of infantry tanks. The breakthroughs were exploited by armored units as large as tank armies. The Red Army early developed heavy tanks and by the war's close had a ratio of one heavy to five mediums in action. Current Soviet doctrine supports a considerably higher ratio of heavies to mediums.

Thus, as a fact today, we face a military world strong in armor. If the other fellow has that with which he can hurt us badly, then, it has always been the Marine way to learn his game and beat him at it. The other fellow has tanks and we have got to learn how to stop them.

For, as the tank has gained, and continues to gain, importance, the antitank field likewise gains correspondingly in importance. Whereas we have had limited experience in the employment of tanks, we have had virtually no experience in antitank warfare. The Red Army, so experienced in antitank combat, has come to attach so much importance to it that Red Army Field Regulations state "The defense is primarily antitank defense!" In other words, the Soviets' opinion seems to be that to stop the tanks invariably leading the hostile infantry main effort is a major step toward stopping the hostile infantry and *preventing a breakthrough,* and should a breakthrough come, then, to stop the hostile tanks is the first step toward *containing it* and minimizing hostile gains.

But the antitank field is of broader importance than simply as a part of the defense. It is, in attacking an enemy strong in tanks, a necessary requisite of successful offensive operations. The tank arm is the fibre of the mobile defense, so much more difficult to overcome than the purely static defense. The coordinated powerful counterattack by hostile mobile reserves spearheaded by tanks constitutes perhaps the greatest single threat to the success of the normal attack.

Our airborne leaders have repeatedly stated that one of the greatest problems of airborne warfare is that of how to stop hostile armor; they have consistently emphasized that an airborne force without an effective antitank defense cannot survive.

There are many similarities between airborne operations and amphibious operations and it is equally important that an amphibious force have an effective antitank defense. The problems and difficulties of achieving a strong antitank defense for an amphibious force during the crucial early phases of a landing appear to be almost as great as during the early phases of establishment of an airhead. The same difficulties of coordination, the same dearth of heavy equipment, and the same vulnerability of the rear with its vital landing areas, exist in both cases.

What is the nature, then, of this new field which we must learn? First, it is difficult. There is no easy way to gain antitank protection; it simply cannot be had cheaply. It constitutes a field of specialized employment of all the arms. Beyond this, all arms must be coordinated in their special role, and the execution or conduct of an effective antitank defense poses one of the most difficult of all problems of control and coordination. A little too late is much too late; to do nothing plays into the enemy's hands. And what must be done must be done under heavy fire. A careful study of the antitank lessons of the last war shows that courage and intuition are not enough—and that skill, precise control and coordination, and adequate equipment are required as well.

We have got to study the thing we must learn to stop, the strong coordinated tank attack. It is an attack inherently characterized by suddenness, surprise, and great power. Tanks can be concentrated relatively quickly for the tank attack or tank counterattack. They will be concentrated at the point of the enemy's selection. The attack will come on a relatively narrow front and its decisive phases will be of relatively short duration. It will often be preceded by artillery and aerial bombardment. The hostile tanks will be followed by infantry, covered by infantry, and assisted by infantry weapons. They will be assisted by direct support artillery and aviation. Tanks themselves will concentrate their tremendous fire power on our forces at the point of contact, which the enemy will have made every effort to determine in advance, as well as the exact nature and disposition of our local forces.

The tank attack, whether it be the case of a tank company or battalion spearheading an infantry drive or the thrust of a large armored unit, thus constitutes an unusually great concentration of fire power and fighting power in a local sector designed to overcome all resistance in that sector. It seeks to achieve decisive results before other more distant weapons can react while local defending weapons fight greatly outmatched on terms of extreme fire inferiority. The enemy will make every effort to isolate the local area of attack by employing covering fires of all types. He will attempt to literally smother our local defending forces, to neutralize them to be virtually incapable of resistance, and finally to overrun and destroy them. That is essentially the nature of the thing we must learn to protect ourselves against.

What is the nature of the antitank defense we must develop to stop this type of attack? Let us start with a fundamental common sense approach to the problem.

We need first to learn all we can about tanks and tank tactics, if for no other reason than to be thoroughly familiar with this problem of stopping the enemy's tanks. We need this knowledge to evolve a sound antitank doctrine and have confidence in it.

Then over and above all matters of technique, the nature of our antitank defense must in essence provide a strong counterconcentration of tank stopping power at the point of the hostile tank attack.

The most favorable conditions possible must be created through maximum employment of passive antitank measures. In the defense, maximum use must be made of antitank mine fields and both natural and artificial antitank obstacles of all types to slow, weaken and canalize hostile tanks. We must do the same thing in the attack. We must improve on the Russian technique of throwing out a screen of controlled mines to protect intermediate objectives within a matter of minutes after seizure in anticipation of the inevitable tank-led German counterattack. We must learn to employ all types of passive antitank measures to gain time and develop favorable conditions for employment of our active antitank weapons.

While passive defensive measures are important, we must not place undue reliance upon such measures alone. Passive antitank defenses are generally capable of being breached, bridged, or by-passed. Tankdozers, bridge-laying tanks, and other more elaborate equipment have been developed for that very purpose. Passive defenses but assist the functioning of the active antitank defense.

In active antitank defense, each arm must develop streamlined timesaving techniques specifically designed to be most effective against the hostile tank attack. Necessary speed and precision can only be achieved through the evolution of a definite doctrine or role for every arm in antitank defense and through careful prior training in that role to achieve near-automatic performance.

Let us consider first the antitank problem of the infantry arm. Infantry depends, in the final analysis, on other arms for over-all antitank protection very much as it depends on other arms to provide counterbattery fire. It is the least suited of all arms to fight tanks, for the tank was specifically developed and designed to destroy infantry. The tank gun is far more powerful than the heaviest infantry gun. Tanks can concentrate fighting power to a far greater degree than permitted infantry because of its dispersion limitations. And finally, the nature of combat is unfavorable to infantry as hostile tanks will concentrate at the point of their selection to attack only a local sector of infantry, which must defend all sectors. Infantry is thus typically dispersed in relatively thin dispositions; and infantry's ability to react, to move, or to move its fire—in short to counterconcentrate—is relatively limited. Such antitank weapons as infantry possess—bazookas, recoilless types, etc., have severe limitations. Although they are tank killers on the proving ground, they have three weaknesses: they are manned by exposed personnel; they are direct fire and so can be observed and their fire returned; and finally, in the normal infantry defense there aren't enough of them at any one place and they have such limited battlefield mobility that they can seldom be moved to oppose a tank attack after its commencement.

Perhaps the most serious weakness, that of exposed personnel, requires that unprotected antitank gunners must function in the face of, and at the time of, the extremely heavy fires of attacking hostile tanks and their supporting fires, if they are going to function at all! Regardless of courage or spirit, the flesh can't stand. We saw that eloquently proven in the Pacific by the failure of fanatical Japanese suicidal tank-hunting teams. It is a lesson, proven in the Pacific and upheld by the record in Europe.

All such short-range direct fire weapons are by their nature subject to being seen themselves by the hostile tanks when they open fire, if not before. From then on out it is a close-range direct fire duel with tremendous fire superiority and every other advantage on the side of the attacking tanks. This situation is but aggravated by the fact that such infantry weapons as happen to be in the zone of hostile attack are relatively few and those outside the immediate zone are characteristically rendered incapable of assistance. In summary, the infantry antitank weapon is one of emergency self-protection. Its proper role is to provide local protection against remnants of hostile armor surviving the fires of heavier antitank weapons. That is the theoretical and practical extent of its capabilities. Barring revolutionary new developments, it will probably be the extent of its capabilities in the future.

The role of artillery in antitank defense is potentially an important one indeed. The Russians achieved considerable success of artillery in direct fire barrages followed by the employment of artillery in direct fire as a final phase. The field gun, as an indirect fire weapon, has great inherent antitank value for the hostile tank can be struck by it but the hostile tank cannot strike back; it cannot turn its massed fire power on it as it can on the direct fire infantry antitank weapons. Although artillery has this tremendous advantage over tanks by virtue of its indirect fire, it has a serious limitation. Indirect fire inherently lacks point accuracy and a direct hit by medium or heavy caliber artillery is required to seriously damage or destroy a modern tank. This does not mean that artillery is unimportant in antitank warfare. Quite the contrary. But it does require that it be massed to deliver concentrations of unprecedented density. We must perfect our techniques of massing fires, for the higher the density of fire the more effective the barrage will be. Antitank barrages must be carefully pre-planned for the timing and placement of such barrages pose many problems. Broadly speaking, every gun within range must be concentrated on the hostile tank approach or we but play into the enemy's hands in allowing him to accomplish our piecemeal destruction. This type of artillery employment, with its critical time factors, calls for the development of the most precise control of massed fires. It calls for the pre-planning and the automatic execution of an artillery antitank doctrine which we must develop in detail.

Like artillery, our own tanks to function effectively as antitank weapons require maximum time factors achieved by the antitank warning system. They must employ mobile tactics to move in strength from central dispositions out to any threatened sector prior to the enemy's arrival. They must take up previously reconnoitered firing positions, providing maximum ground and aerial concealment, hull defilade, and good fields of fire, preferably providing fire at the flank of the hostile armor. They must utilize their mobility to move from position to position. Our tanks must be flexibly employed in strength, for here again, a little is not enough. We must devise a doctrine for control of our tanks in antitank defense at division, corps, or the very highest workable level, in order that we can counterconcentrate sufficient strength to meet and destroy the hostile tank concentration. Decentralized control clearly plays into the enemy's hands by permitting our piecemeal destruction. Thus, if the enemy concentrates his tanks to attack one unit of a corps, all tanks of the corps must, if needed and physically capable of the movement, be employed to repel the attack, rather than have the tanks of units not attacked stand idly by only to see the enemy overrun neighboring sectors, outflanking their own positions, and later find themselves attacked from the flank or rear or forced to withdraw under most unfavorable conditions.

Because the same Marine tanks that must provide antitank protection are, broadly speaking, also employed to support our infantry, we must develop a positive system of dual tank control. Such a system of control must be flexible to provide maximum antitank protection interference with the important infantry support mission. A "graduated system of antitank alerts" is a possible solution. Such a system might well include an "alert" calling for the automatic antitank employment of tank reserves under direct control of the division or corps tank officer, another "alert" to automatically provide coordinated employment of the tank reserve plus the tanks in support of the threatened infantry regiment's sector, and an "alert" calling for the automatic coordinated employment of all tanks. The record proves the great value of direct artillery and air support to tanks in tank versus tank action. Tank-borne artillery forward observers and forward tactical air controllers, with direct communications, appear to be a "must" for our tanks in the antitank role.

Naval gunfire is the Marine Corps' artillery during the critical period to the landing of our field artillery. Although it is highly effective in an antitank role in delivery of direct fire, it is of very limited effectiveness in delivery of indirect fire. This is not good enough, for a smart enemy will give our naval gunfire support ships only fleeting glimpses of his tanks. We must make naval gunfire also an effective indirect fire antitank instrument. Called naval gunfire support must be initiated earlier during the beach assault; if necessary, with NGF spotter personnel embarked in tanks or other armored communication-observation vehicles. Techniques must be perfected to provide direct naval gunfire support to our tanks in their antitank role, at least until artillery becomes operative ashore. This may involve the initiation of tank-borne gunfire spotter personnel and direct tank-ship communications. Beyond this, in indirect fire the antitank value of naval gunfire, like artillery and tanks, will vary directly as its over-all flexibility and ability to mass are increased. We must strive to shorten existing time factors required to mass the fires of our fire support ships.

Aviation has been proven to be a valuable antitank arm. Aviation is of vast indirect importance in strategic bombing, invaluable in striking hostile tanks in assembly areas, in defiles, and in striking supply trains of armored units. It can slow or stop the over-road movement of armor. Its observation function is vital. But to date, aviation has been of far greater value in thus striking tanks prior to inception of the tank attack than it has been as a tactical antitank weapon once the hostile attack is launched. This has been due to the fact that we have lacked an aerial weapon, heavy enough to knock out a tank, that has either sufficient point accuracy or sufficient density of area fire to hit moving deployed tanks. Development of a homing bomb of a type rendering countermeasures difficult is needed; or a rocket of greatly increased accuracy may become the long-sought effective aerial antitank weapon. In addition, we must streamline our present close air support technique to increase aviation's effectiveness as a tactical antitank weapon. Existing time factors required to obtain a close air support strike simply won't do—the hostile tank attack would be over! Like naval gunfire, we must achieve continuous called close air support throughout the landing, commencing at H-hour, if necessary by employment of armored communication-observation vehicles to carry our forward tactical air controllers. And, as a proven factor of great value, we have to perfect direct air support of our own tanks in their tank destroyer role. This will probably require tank-borne forward tactical air controllers and direct tank-plane communications.

Centralized control, to provide flexibility and the ability to mass constitutes the all-important characteristic of the special antitank functions of the several arms. Its workability depends directly upon adequate warning time. Therefore, we must bend every effort to achieve an effective antitank warning system. Marine intelligence must become tank-minded; we must develop and utilize every means of ground and aerial observation, including radar observation; we may find it necessary, as the Red Army has, to set up special antitank communication nets. Whatever is necessary must be done for we will never have a good antitank defense without a good antitank warning system!

In all the history of antitank warfare the error most consistently and frequently recurrent is failure to bridge the gap between proving ground or theoretical capabilities of weapons and their actual capabilities *in the face of and under the conditions of the hostile tank attack*. There is only a relatively brief period during the course of the hostile armored attack during which the Marine antitank defense will either succeed or fail. It must be able to function under the difficult conditions existent at that time. The enemy will seek at least temporary air and artillery superiority to support his coordinated tank attack. He will lay down intense direct fire from his tanks and infantry weapons in the actual zone of attack. He will seek to drive our aviation and aerial observation from the air; he will seek to neutralize our artillery by counterbattery and air attack. He will seek to blind our observation and disrupt our communications. We must recognize these things and overcome them. The antitank functioning of the several arms must in this sense be shockproof. It must have staying power. This is a big order and may involve duplicating observation and communications; it may require large-scale smoking operations to cover our tank movements, artillery gun positions, etc.; and it certainly will involve the most skillful utilization of protective terrain features in the location of command posts, communication centers, etc. The problem is to prevent a breakdown in the antitank functioning of the several arms during the very period that it is so vital that they function, to adapt them to specifically function under those adverse conditions. We must eliminate the frequent and often fatal miscalculation of the past between the theoretical and the practical. The necessity of keeping this important factor ever in mind in antitank warfare cannot be overemphasized.

But our problem goes beyond the development of special antitank functions and techniques for the several arms and the proofing of the several arms to execute those functions under the conditions that they must fight. We must achieve the coordination of the antitank roles of all arms. Thus the antitank roles of tanks, infantry, aviation, artillery, and the passive antitank functions of engineers must be carefully coordinated into one integrated defensive system. It is obvious that the interrelationship of the detailed functions of the several arms will vary in the attack, in the defense, by day and by night. It will vary in every particular situation dependent upon terrain, the enemy situation, and our own situation. The coordination of the antitank defense must, in the interest of flexibility, be a function of the highest workable echelon. Our higher commanders, and their staffs, must therefore become expert in the antitank employment of the several arms.

Coordination in planning will require expert judgment. Coordination in the execution phase will prove a major task of command because of the two criteria to success of all antitank effort—*mass and speed!*

There is one thing more that must be added to the scope of our already gigantic task. We must adapt all this to the Marine specialties. We must adapt the special antitank functions of the several arms, their proofing to remain operative under contingent unfavorable conditions, and their coordination—to base defense and the amphibious attack.

The field of base defense poses many special problems, foremost of which is the extreme importance of proofing our antitank defense to function effectively under conditions of violent attack.

The adaptation of a strong antitank defense to all phases of our amphibious attack poses even more difficult problems. Yet, in the armor-strong military world today, it is vital that we achieve continuous positive antitank protection for all phases of the amphibious attack, commencing with the ship-to-shore movement and first assault echelons ashore.

Our troops still move ashore in landing craft or vehicles providing concentrated lucrative targets, and they are yet able to develop only a fraction of their fighting power while so exposed. Our protective measures, the LVT(A) and air and naval gunfire scheduled post H-hour isolation fires to protect this inherently vulnerable phase of the amphibious attack were specifically developed to be effective against a Japanese infantry defense. They were most effective against such a defense. But will they, without extensive modification, be equally effective against an armored defense?

Our amphibious attack was not designed to overcome such a defense and the characteristics of the LVT(A), the density of our NGF isolation fires and relatively cumbersome and slow procedures for massing naval gunfire, the relative lateness of landing our artillery, tanks, and heavy weapons, the relative lateness of initiation of called air and NGF support ashore —all these things reflect their background of development to cope with a hostile infantry defense. As we prepare ourselves to fight an armor-strong enemy, as we must today, it is necessary that we thoroughly scrutinize, and modify as necessary, our amphibious doctrine and technique.

To adequately protect our landing forces against the threat of hostile tank attack we must achieve a continuous antitank defense commencing with H-hour. And the nature of the threat precludes decentralization and dictates maximum centralization of control to achieve requisite massed protective fires of maximum speed and flexibility. Decentralization, always so tempting in landing operations, is the antithesis of efficiency in antitank defense. The nature of the coordinated tank attack renders it simply a case of united we stand, divided we fall.

That we are singularly lacking in experience in the antitank field and have relatively little knowledge of it, is a factual condition. While this has not constituted a weakness in the past, if it continues, it may constitute a grave fault in the future.

We saw the enemy fall helpless before the guns and flame of our tanks. We know the tank is inherently designed to strike without being struck. It is a weapon which very definitely requires a defense against it, with the cost of failure annihilation. Against the Japanese we had a virtual monopoly of these powerful weapons. That is no longer the case.

In conclusion, we must above all guard against complacency nurtured by our consistent successes of the Pacific War, for it is historically fatal for a victorious military organization to adopt the frame of mind or psychology that it has learned enough in winning any particular war to win the next one. We must, rather, always realize that we do not know enough, now, to win again! We have much to learn, including how to stop tanks.

RIDING AND SCHOOLING HORSES

By The Late Brigadier General Harry D. Chamberlin

The Principles of Equitation are laid down in this book in language understandable by everyone. It is a book written to help the reader become a better horseman. There are chapters on Seat, Hands, Application of the Aids, Saddlery, Schooling, and Jumping. This famous book, which has been out of print for some time, has been republished by the Armored Cavalry Journal. The price of the book is $4.00 a copy. Place your order now.

TANKS AND INFANTRY IN NIGHT ATTACKS*

*by Lieutenant Colonel W. D. Duncan***

NIGHT attacks have been employed by military leaders for centuries, but they have never been used as frequently as daylight attacks. Prior to World War II the use of stealth in night attacks was stressed. Stealth gave way to speed, fire power, and aggressiveness in many night attacks in the recent war. A great number of successful attacks were launched in which the artillery fired a concentration, and tanks with mounted infantry advanced rapidly, all guns firing. This type of night attack is the antithesis of that in which the infantry attacks silently, without an artillery preparation, and dispatches the enemy with the bayonet.

A soldier untrained in night warfare has an inherent fear of darkness and of the unknown which results in a great lack of confidence. He thinks darkness is his enemy. Training in night combat or participation in several successful night attacks will aid the soldier in overcoming a great deal of his fear, and will cause him to realize that the darkness is a silent friend, ready to help him.

When the average American soldier has been properly trained in both daylight and night operations, he will prefer to attack over open, flat terrain under the concealment of darkness rather than in the light of day. Well planned and well executed night attacks reduce casualties, surprise the enemy, maintain the impetus of the attack gained during daylight, and raise the morale of the attacking troops while lowering the will to resist of the defending forces.

During the latter part of the North African Campaign, the British adopted night attacks as the normal method of attack. In moving from El Alamein to Tunis, every major British assault was launched at night. As the war continued, the night attack became more and more common with United States divisions. In Italy and France the 3d U.S. Infantry Division adopted the night attack as a standard procedure and became very skilled in its execution. They concluded that, except for the degree of control needed, the procedure of planning and executing a night attack was essentially the same as in a daylight attack.

In Holland and Germany the ~~140th~~ 104th U.S. Infantry Division launched over one hundred night attacks, all of which were reported by the division as being successful. These excellent results were achieved because the division commander believed in night attacks and had stressed them in the training of his division before it entered combat. The 30th U.S. Infantry Division had similar success with night attacks in France, Belgium, Holland and Germany.

Nor was the enemy without success in night attacks. The Germans, confronted with allied power and artillery superiority, chose the night attack as a means of attempting the regain the initiative. In the Pacific, the clever night penetrations and infiltrations by the Japanese in the early years of World War II were responsible for many of their initial successes. Later, the night attack was used by the Americans in the Pacific to seize strong positions when the Japanese withdrew their main forces at night to avoid artillery fire.

Night attacks were found to be very successful when the infantry was supported by tanks. The approach of infantry and tanks in the concealment of night caused terror and a feeling of helplessness among many soldiers. This was especially true when the tanks and infantry advanced rapidly at night using assault fire. This method of attack was often used in the capture of small villages which were used as strong points by small, determined enemy forces. The attack usually began with a heavy artillery concentration which included rounds of white phosphorus to set the village on fire and to mark the objective. Then the assault units advanced rapidly, the infantry mounted on the tanks.

**Military Review*, October, 1947.

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The tanks fired machine guns and cannon as they advanced toward the burning objective. However, one must realize that tanks can be used successfully in this method of attack over suitable terrain only, and when the tank commander can see at least fifty yards to his front. There must be close cooperation with the infantry.

In the future, we may expect night attacks to be as commonplace as daylight attacks. Therefore, in order to insure an improvement in our methods and in the techniques of night combat, we must emphasize night operations in our future training programs. It is desirable that, at the outbreak of any future conflict, we have officers thoroughly trained and indoctrinated in night combat.

To become experts in night warfare, troops must train many hours under blackout conditions and must participate in all possible types of night operations. Tanks, infantry, and artillery must train together, each with a desire to develop the most efficient means of cooperation and coordination in night attacks and in night defense. The absence of night training will force units to experiment during combat, often at a great price, in an effort to achieve a measure of success.

An excellent example of what can be accomplished in night attacks by units which have fought together for nearly a year was demonstrated by the 30th U.S. Infantry Division and two attached units, the 743d Tank Battalion and the 823d Tank Destroyer Battalion, during the nights of February 25-26 and 26-27, 1945. During these two nights the division attacked along a 6,700-yard front with two regiments abreast, penetrated 9,800 yards into enemy territory, and captured eight villages defended by German *panzer* troops. The attacks took place over flat farmland consisting essentially of beet and stubble fields which were illuminated by a very dim moon. The attack moved parallel to and slightly in rear of, the enemy main battle position, exploiting a penetration made by the division between Jülich and Duren on the night of February 23.

On the night February 24-25 the enemy defenses along the Roer River were reinforced by the 9th and 11th *Panzer* Divisions. Elements of these divisions occupied the towns in the division zone of advance.

The 30th Infantry Division caught elements of the *panzer* divisions in the villages before they were able to orient themselves in the fast changing situation. The 30th Division moved rapidly during daylight February 25, into the villages of Rodingen and Hollen and occupied Steinstrass by 4 p.m. See Figure 1.

At this time it was decided that the best way for the division to gain its objectives, and to prevent the enemy armor from making a coordinated counterattack, was to continue the attack as soon as possible. However, attacking the villages over the open terrain in daylight would have been costly. Consequently, the division began a series of night attacks which completely broke the enemy resistance along the entire XIX Corps front, thus materially aiding the advance of the 29th Infantry Division and opening the door for the 2d Armored Division to race out over the Cologne Plain toward Düsseldorf and the Ruhr.

General Plan of the Attacks

The general plan for the night attacks called for continual assault throughout the night by the division. The regiments were expected to assault and capture one objective between the end of twilight and midnight, and another objective between midnight and dawn. Normally at least three infantry battalions with attached tanks and tank destroyers were attacking during the night in the division zone of advance. In some cases the same infantry battalion took one objective before midnight and passed on to take the second before daylight, while in other cases, one infantry battalion took a village before midnight and a second infantry battalion with its tanks passed through to take the second objective between midnight and dawn. See Figure 1.

During these night assaults by the 117th and the 120th Infantry Regiments, they were reinforced by the following armored units:

117th Infantry Regiment:
  Attached:
    743d Tank Bn.
    Co C, 823d TD Bn.

120th Infantry Regiment:
  Attached:
    744th Tank Bn (L).
    Co B, 823d TD Bn.

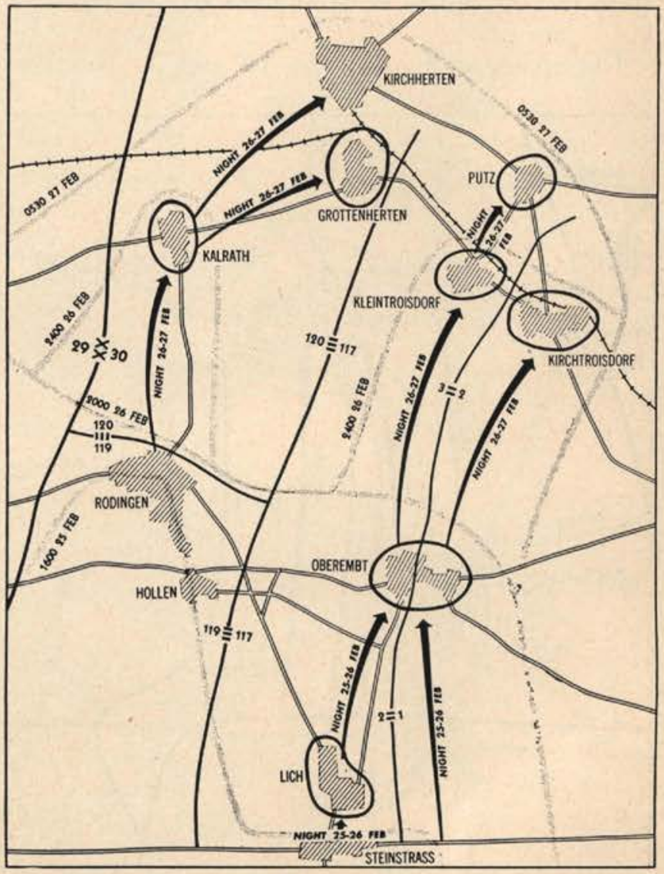

Figure 1

DETAILS OF THE NIGHT ATTACKS

The details of two of the four night attacks made by the 117th Infantry Regiment during the nights Feb. 25-26 and 26-27, illustrate one method by which tanks and infantry can attack successfully together at night.

During the night, February 25-26, Lich and Oberembt were captured. Warning orders for the attack on these villages had been issued immediately after the capture of Steinstrass by the 3d Battalion and the attack order was issued at 6 p.m., February 25. See Figure 2.

a. Attack on Lich.—A heavy artillery concentration was placed on the village at 9:45 p.m. (H hour). An assault company of the 2d Battalion, 117th Infantry, mounted upon the tanks of Company A, 743d Tank Battalion, advanced rapidly due north from Steinstrass. A second company of infantry followed in column on foot. The remainder of the battalion furnished fire support from Steinstrass. When the assault elements, moving forward at about five miles per hour, arrived within 100 yards of the village, the infantry dismounted and the tanks began to pour cannon and machine-gun fire into the objective. Then the assault elements moved into the village. By midnight the attacking elements of the battalion had cleared the town of enemy, had organized the pre-planned defense, and had repelled an enemy tank and infantry counterattack.

b. Attack on Oberembt.—The regimental order stated that upon the capture of Lich the 117th Infantry Regiment would prepare to continue the attack at 4 a.m., February 26, to seize Oberembt prior to daylight, 7 a.m. See Figure 1.

Formations for the Attack: 1st and 2d Battalions abreast, 1st Battalion on the right. The assault force consisting of two infantry companies attacked abreast, the assault platoons of each mounted on a platoon of tanks advancing abreast. Remainder of assault companies advancing on foot in column.

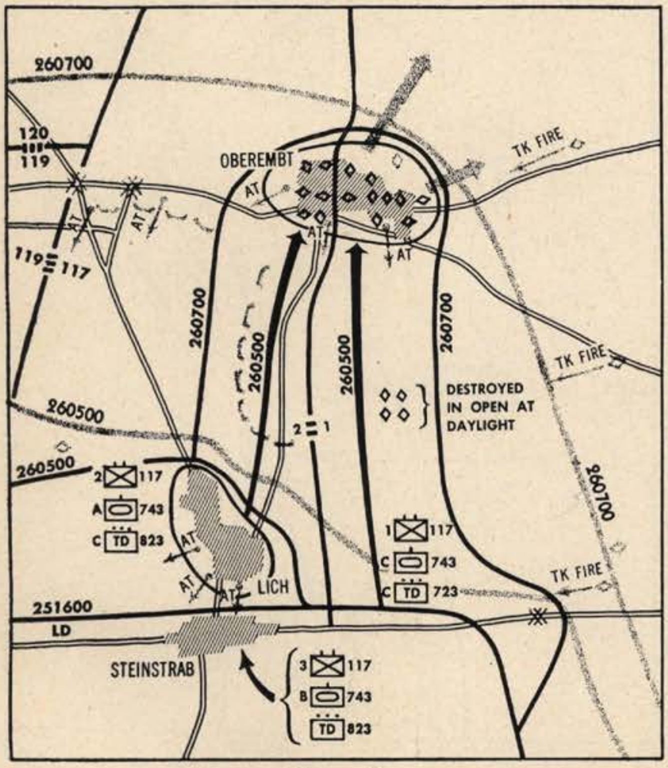

Figure 2

The 2d Battalion used the same formation as that used in the attack on Lich with different infantry mounted on the assaulting tanks.

A section of TDs and the tank company commander moved with the assault company on the right flank.

The reserve force consisted of the 3d Battalion minus.

Artillery and Supporting Fires: 2400-0400: Intermittent fire by infantry and tank mortars, tank assault guns, and by the 118th Field Artillery Battalion in direct support of the regiment; 0400: "Time on Target" by division artillery with occasional rounds of white phosphorus to mark the objective; "On Call"—heavy concentration to be placed on the objective or lifted on call of assaulting forces; a box concentration available to box the objective in case of enemy counterattack.

Control and Communications: Since the assaulting infantry platoons rode on the tanks to within 100 yards of the village, the initial control of the assault elements was simple. The tanks were guided to the objective by the burning buildings in it, and by the main roads leading from the line of departure. With this arrangement the infantry soldier, once mounted on the tank, could not become lost in the darkness, and the infantry following on foot could easily guide upon the tank tracks in the soft fields and upon the burning objective.

The infantry assault platoon leader rode in the platoon command tank with the tank platoon commander. They could discuss the situation as they advanced, and by infantry radio or tank radio could speak to all the other platoon leaders, to each tank in the platoon or company, to the tank company commander, and to the infantry company commander. With such a communication system available to each assault platoon leader it was almost impossible to lose contact between units.

The control of the units in night fighting was also safeguarded by detailed pre-planning. Excellent aerial photos, aerial mosaics, and 1:25,000 scale maps were available to all commanders down to and including the infantry and tank platoon leaders. Infantry platoon leaders and tank platoon leaders had carefully studied their routes of advance and had prepared the plans by which they would clear the enemy from the parts of the village assigned to them. They also studied and selected the defensive positions to be occupied on the perimeter of the village after its capture.

Conduct of the Attack: The 1st Battalion moved east at 2 a.m. from Steinstrass to deploy along the highway which was to be the line of departure. While this movement was under way, a German tank and several armored personnel carriers, with German infantry concealed by the darkness, made a surprise attack on the 1st Battalion. The surprise resulted in a scattering into the darkness of the leading companies. Then a tank destroyer in a defensive position on the outskirts of Steinstrass destroyed one of the attacking personnel carriers with a direct hit, and the enemy force withdrew to the east. The confusion resulting from the surprise attack delayed the jump-off until 5 a.m.

At H-30 a tank platoon and two platoons of infantry moved along the highway to a position one mile east of Steinstrass and organized two roadblocks. While moving into position, this force encountered the enemy unit which had attacked the 1st Battalion just previously. After a brief encounter the enemy withdrew. Simultaneously with the jump-off, another enemy force, consisting of several enemy tanks and infantry, tried to drive through the roadblocks. Under the combined fire of the two infantry platoons and the tank platoon, the enemy withdrew hastily, leaving a burning tank behind.

Because of this protection on the east flank, the 1st and 2d Battalions crossed the line of departure at the new H hour of 5 a.m., with all leading tanks carrying infantry and firing their tank cannons into the burning objective. The objective was well marked during the assault by occasional rounds of white phosphorus falling on it. The assault units of the 1st Battalion advanced rapidly over the flat, open ground in the dim moonlight with only an occasional round from an enemy direct fire weapon attempting to locate them. The assault elements of the 2d Battalion encountered dug-in enemy shortly after leaving Lich, but the resistance was soon overcome when the infantry and tanks employed assault fire.

The assault units were within 1,500 yards of Oberembt before the leading tanks began firing their coaxial and bow machine guns. As the assault platoons arrived at a position 500 yards from the objective they requested the artillery to place a heavy concentration on the village and to continue it until the troops were within 100 yards of Oberembt. When the artillery lifted, the infantry dismounted from the assault tanks, and all tanks, firing their cannon and machine guns, advanced slowly with the infantry. The entire attack was so confusing to the enemy that they did not fire any of their defensive concentrations.

Once in the village, the tanks ceased firing except on request of the infantry who were busy mopping up resistance consisting of isolated and bewildered groups of enemy firing from houses and courtyards. The infantry and tanks moved swiftly to the parts of the town assigned to them, and upon cleaning out the enemy resistance, set up the previously planned defenses. Enemy tanks were encountered in the west end of town and were driven out. Two enemy tanks with their engines running were abandoned by their crews. While attempting to escape from the village a German self-propelled 380mm assault gun mounted on a Mark VI chassis was destroyed at seventy-five yards by the 76mm gun of a platoon command tank.

The advance to the village in the darkness was not without loss, however. During the darkness the command tank of Company C and another tank fell into adjacent bomb craters. On the way forward one tank of the reserve platoon and the T-2 tank retriever from company maintenance stopped to pull the two tanks out of the craters. Unfortunately dawn came just as the last tank was pulled out. With the arrival of dawn came visibility for the enemy tankers and antitank gunners concealed along the exposed eastern flank. The enemy fired five rounds, quickly destroying all the armored vehicles and wounding the company commander. If the attack had begun at 4 a.m. as initially planned these losses would have been avoided. With daylight, enemy artillery, mortar and tank fire commenced falling on the recently captured objectives. One of the tanks of Company C moved to an exposed position at the perimeter of the village from which it could fire upon an observed enemy tank to the north, but was destroyed by a second enemy tank to the east before it was able to fire a round.

Results of the Night Attacks February 25-26: In the night attack on Lich by the 2d Battalion, 94 prisoners of war were taken, many enemy were killed, one enemy tank was destroyed, several antitank guns were overrun, a strongly held village was captured within two hours.

The attack by the 2d Battalion north of Lich was met initially by dug-in enemy. Forty enemy soldiers were captured, several were killed, and others fled into the darkness.

In Oberembt, elements of the 11th *Panzer* Grenadier Regiment and the 301st GHQ Tank Battalion were surprised by the assaulting force. This resulted in many enemy killed, and 168 captured. Two enemy tanks and an assault gun were captured or destroyed along

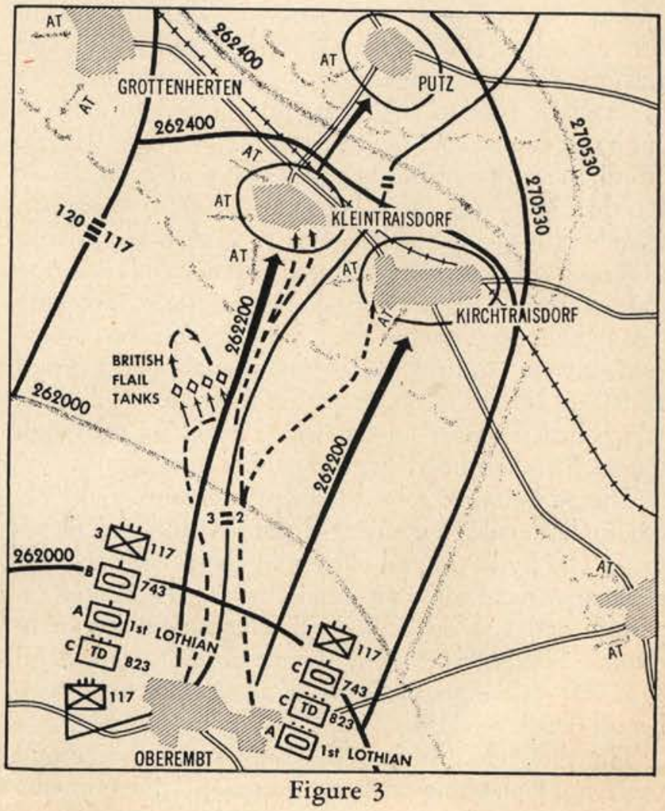

Figure 3

with many antitank guns.

The losses to the attacking forces during the hours of darkness were negligible. The major losses occurred after daylight February 26, and resulted in the destruction of four medium tanks and one tank retriever of Company C, 743d Tank Battalion. Without doubt, heavy losses would have been inflicted on the assaulting force if the attacks had been attempted during daylight.

c. Attack on Kirchtraisdorf, Kleintraisdorf and Putz. —On the night of February 26-27 the attack continued and resulted in the capture of Kirchtraisdorf, Kleintraisdorf and Putz. Warning orders for the attacks on these villages were issued early on the morning of February 26, thus allowing time for necessary reconnaissance, planning, and preparatory moves. At 6 p.m., the battalion commanders, tank company commanders, and the commanding officers of "A" Squadron, 1st Lothian and Border Yeomanry were briefed for the attack at the regimental command post in Oberembt. "A" Squadron was a British flail tank company attached to the 743d Tank Battalion for the purpose of breaching any enemy mine fields encountered. See Figure 3.

The artillery plan, the method of control and communication, and the conduct of the attack followed the same general pattern as the attack on Oberembt. However, several different problems presented themselves. First, the 3d Battalion with Company B, 743d Tank Battalion was in regimental reserve in Steinstrass, and had to move to Oberembt after twilight on the 26th and still attack in time to capture its objective before midnight. This meant marching 3,000 yards, assembling in an attack position behind the line of departure, and passing through another unit under the cover of darkness. Second, during the short period of time the 3d Battalion was passing through to Oberembt the entire regiment was concentrated in the small village and was exceedingly vulnerable to an enemy artillery concentration, or to having its line of communication cut by an enemy counterattack on Steinstrass and Lich. Third, the regiment was to attack two similar objectives less than 300 yards apart over some 2,700 yards of open terrain with two battalions abreast. Unless the assaulting units were carefully oriented and correctly led, the chance of attacking the wrong objective, or of attacking one another was very possible. Fourth, after the two objectives were captured, the regiment again had to "pull its tail up behind it" in order that the reserve battalion which had remained in Oberembt could pass through the 3d Battalion in Kleintraisdorf and attack Putz.

The 3d Battalion solved the first problem (a) by exceedingly detailed planning of the first forward movement, (b) by having all officers in the assault echelon make a personal route reconnaissance to the line of departure and (c) by having all officers and key noncommissioned officers study the aerial photographs and 1:25,000 scale maps carefully in an attempt to remember all details of the terrain.

The division furnished the solution to the second problem by planning artillery fire on all known enemy artillery positions during the period of the move, and by moving an attached Combat Command of the 2d Armored Division into Lich and Steinstrass to protect the east flank and the regiment's line of communication.

Close control and an excellent communication system were the solution to the third requirement. However, detailed planning, a thorough study of aerial photos and maps, and the use of white phosphorus to mark the objectives were also of importance in maintaining direction.

A division order moving elements of the Combat Command into Oberembt when the regimental reserve moved out was the answer to the fourth problem.

In spite of the great care taken to insure that all major difficulties would be anticipated and eliminated as far as possible, one unfortunate accident occurred.

The 1st and 3d Battalions were to cross the line of departure at 9:45 p.m., February 26, and attack northeast to their respective objectives. However, due to slowness in assembling for the attack, the 3d Battalion crossed the line of departure ten minutes late.

The 1st Battalion reinforced, moved along the road running north out of the northeast corner of Oberembt for about a mile when the assault tanks with the infantry turned northeast along another unimproved road that led to the objective. The four tanks of the British flail platoon following the assault echelon missed the turn and continued north toward the objective of the 3d Battalion. The British platoon leader soon realized he was lost and turned to go back the way he had come. See Figure 3.

The 3d Battalion, echeloned to the left and ten minutes behind the 1st Battalion, moved along the road running north from the northwest corner of Oberembt. When the lead tank platoon was halfway to its objective, the platoon leader observed the silhouette of four tanks approaching his platoon from the direction of the burning objective. He ordered his platoon to open fire and they succeeded in destroying all of the approaching tanks which were later identified as the lost British flail tanks. Except for enemy resistance the battalion continued its attack and seized its objective without any further difficulties.

RESULTS OF THE NIGHT ATTACKS FEBRUARY 26-27

The attacks on Kirchtraisdorf, Kleintraisdorf and Putz were successful. During the night over 100 prisoners were captured, many enemy were killed, and several antitank guns and vehicles were overrun. At daylight the remnants of an enemy infantry battalion crawled out of dug-in positions between the initial objectives and Oberembt and marched into Oberembt to surrender. These positions had been overrun during the night attack without opposition, the enemy in their terror preferring to hide in their holes rather than to fight. The prisoners were first-class German soldiers.

The attacks on this night advanced the 117th Infantry Regiment more than 4,000 yards on a 2,000-yard front to capture three enemy villages that were defended by elements of two *panzer* divisions. The losses to the attacking forces due to enemy action were negligible.

SUMMARY OF ACTION

During the nights of February 25-26 and February 26-27, the 117th Infantry Regiment advanced 8,200 yards on a 2,000-yard front to seize five enemy-held villages, to capture over 300 prisoners, to destroy or capture five enemy tanks, to destroy or overrun many antitank guns and miscellaneous vehicles, and to kill many enemy.

The 117th Infantry Regiment had less than thirty men killed in action and the 743d Tank Battalion and its attached flail company had four killed in action, four tanks and one tank retriever were destroyed by enemy fire after daylight, and four British flail tanks were destroyed by friendly fire.

The 120th Infantry Regiment with the 744th Tank Battalion attached, attacked on the night 26-27 in conjunction with the 117th, advanced over 4,500 yards, and seized the villages of Kalrath, Grottenherten, and Kirchherten against resistance by enemy armor and infantry. The losses of the 120th Infantry were less than those of the 117th Infantry.

In these historical examples the results show the advantage of night attacks over daylight attacks. This can be even better illustrated by an attack during daylight which took place the following day. The conditions except for visibility were identical with the conditions met during the night attack. Within ten minutes after crossing the line of departure Company B, 743d Tank Battalion, lost eight tanks. The 119th Infantry Regiment with its remaining attached tanks and tank destroyers fought for fourteen hours to capture a village similar to the ones captured within two hours in a night attack.

LESSONS LEARNED

1. A well planned night attack in which tank-infantry teams are employed is less wasteful in lives, time, and equipment than are similar daylight attacks.

2. Tanks should be employed with infantry in night attacks if the conditions are suitable.

3. Artillery preparations should be used at night when tanks and infantry attack as a team.

4. The line of departure should be secured prior to a night attack. The failure of the 1st Battalion to secure its line of departure for the attack on Oberembt early enough delayed the attack one hour and might have resulted in a failure to attack.

5. The execution of a night attack by the infantry and tanks should be fast and aggressive. During a night attack by tanks and infantry, speed and aggressiveness must not be curbed by an attempt to maintain secrecy. Stealth is not important in a tank and infantry night attack, because the noise of the tanks precludes it.

6. Thorough briefing and reconnaissance are essential. Reconnaissance will often be limited to a study of the map or an aerial photograph, or to long-range visual reconnaissance from an observation post.

7. Proper control and a dependable communication system are vital.

8. The plan for the defense of the objective after capture must be worked out in detail before the attack. It must be executed rapidly and prior to daylight. Each squad and tank must know, before the attack, its part in the plan for the defense of the objective when it is taken. In the attack on Lich and Putz the enemy counterattacked within an hour after the objective had been taken from them. The counterattacks failed because of the pre-planned defense of the objective. Artillery defensive concentrations must be pre-planned to box the objective in case of enemy counterattack.

9. If the objective of the night attack is a village, the attacking troops should attempt to pass through and secure the perimeter as rapidly as possible. Detailed clearing of enemy from buildings can be accomplished later.

10. Infantry-tank night attacks should be planned so that at least one objective is taken by the division before midnight, and a second objective before daylight. This should guarantee a deep penetration and a possible overrunning of enemy artillery positions. It will also disorganize the enemy defensive position and make the daylight attack the next morning less costly to our troops.

RIDING AND SCHOOLING HORSES

By The Late Brigadier General Harry D. Chamberlin

The Principles of Equitation are laid down in this book in language understandable by everyone. It is a book written to help the reader become a better horseman. There are chapters on Seat, Hands, Application of the Aids, Saddlery, Schooling, and Jumping. This famous book, which has been out of print for sometime, has been republished by the Armored Cavalry Journal. The price of the book is $4.00 a copy.

CARDED

4th Cavalry Group In Combat

by Major Eugene J. Field

D-DAY marked the first appearance of elements of the 4th Cavalry in combat in World War II. Three missions were initially assigned the Group. All three were completely independent of each other.

Six thousand yards off the Utah Beach was the Illes Ste. Marcouf, consisting of two barren, rocky, windswept islands, the Ille de Terre and Ille du Large. Normally uninhabited, these ancient Napoleonic fortresses showed signs of trench works and gun emplacements according to our aerial reconnaissance. Because of their proximity to the landing beaches, they had to be seized and neutralized prior to H-Hour (6:30 a.m.) on D-Day, as they presented a definite threat to landing operations. Moreover, it was a most desirable site for our antiaircraft batteries that would engage the inevitable Luftwaffe. A task force consisting of two troops trained in amphibious operations, commanded by Lieutenant Colonel Edward C. Dunn, debarked from Southampton, England, on D minus one and were in position to make the seaborne landing at 2:30 a.m., D-Day. At 4:30 a.m., D-Day, two hours before H-Hour the force had landed as directed by Field Order Number One, VII Corps. This was prior to the entry of some of the glider and airborne units into France.

The 82d Airborne Division dropped on the early morning of D-Day. It was imperative that ground elements effect a link-up with them. Troop B, 4th Squadron, was assigned this mission. The troop landed with their vehicles at 9:30 a.m. on D-Day and fought their way to the town of Ste. Mere Eglise, 10 miles inland where contact was made with the 82d Airborne Division. The troop was used for combat patrols and security missions. During the period June 6 to July 3, the unit accounted for over 500 enemy killed or captured. They were able to infiltrate behind the lines of the confused and bewildered enemy and on several occasions caught German vehicular columns on roads and with canister and machine guns wreaked havoc with them.

The unit continued to be attached to the 82d Division in their advance up the peninsula, protecting supply lines, running down snipers, picking up stragglers, maintaining order, performing combat patrols and security for the Division. They assisted immeasurably in the success of the mission of the 82d Division, although suffering heavy casualties. One platoon was completely destroyed, however, the terrific toll in Germans killed and captured, enemy vehicles and material destroyed, more than balanced the scale in the operation.

Normandy Operation

On June 15, the remainder of the Group landed at Utah Beach and all units reverted to their respective squadrons. The 4th Squadron was attached to 9th Infantry Division that was attacking north on the west side of the Cotentin Peninsula and the 24th Squadron was attached to the 4th Infantry Division that was attacking north on the east side of the Cotentin Peninsula. Both units were completely detached from group control and operated independently of each other approximately 20 miles apart. Initially, the 4th Squadron was used to maintain contact between the 9th Infantry Division and 79th Infantry Division which were attacking abreast in a drive north to capture the prize port of Cherbourg. In its drive west to seal off the peninsula, the 9th Infantry Division was able to reach the west coast of the peninsula. This put the left flank of the division on the channel but as they advanced north toward Cherbourg, they moved in from the channel thus exposing their flank. The 4th Squadron was then relieved from maintaining contact between the 79th Infantry Division and 9th Infantry Division and shifted to screen and protect the left flank and rear of the 9th Infantry Division. This action was performed mounted.

The advance was swift over the narrow hedge-lined Normandy roads. However, the Germans had sufficient time to prepare excellent positions and although they were overwhelmingly outnumbered and sealed off, the terrain and road net offered no opportunity for a wide end run. Prior to the final drive into Cherbourg by the 9th Infantry Division, the 4th Squadron was given the mission of holding a line which was a prolongation of the infantry line approximately 15 miles south of Cherbourg. From this line dismounted patrols were able to infiltrate in enemy rear for periods as long as three days and to direct Division and Corps artillery on highly prized targets. It was here that it was forcibly demonstrated that there is no such situation as a static one in the true sense. Whenever in contact with the enemy in defense or holding, aggressive action must be the order and patrols must be constant, both day and night, continually probing for a hole or an indication of weakness on the part of the enemy. After the fall of the city and part of Cherbourg, there still remained a long tip of peninsula extending northwest into the English Channel. There were still a large number of enemy troops and installations in the area. It was generally conceded that these enemy troops although scattered constituted a threat. Moreover, information was received through intelligence agencies that these troops were heading for the isolated beaches that offered them escape routes where they could move by sea to southern France to rejoin uncommitted German units.

The 4th Squadron was given the mission of working out to the northwest tip of the Cotentin Peninsula to capture or destroy all enemy troops, neutralize enemy gun and fortification emplacements, and seal off all escape routes. The resistance was rather sporadic but large numbers of enemy personnel and equipment were captured. This is but another incident of a job falling under the heading of a special operation that can be handled by cavalry with its mobility and ability to cover a large, lightly held area. The use of cavalry in this clean-up operation, precluded the necessity of detaching a battalion of infantry which would not have been able to move as quickly or the use of an armored unit which was not available at the time.

On June 15, the 24th Squadron was attached to the 4th Infantry Division and the mission of relieving the 22d Infantry of that Division along the Sinope River and maintaining a counterreconnaissance screen to the front. The 22d Regiment had been the right flank regiment in the Division attack and had suffered heavy casualties after nine days of furious fighting. The 8th and 12th Infantry Regiments were committed and no other reserves were available. The reconnaissance troops were dismounted and moved into the infantry sector with E Troop furnishing artillery support and F Troop tanks in reserve. The German counterreconnaissance was particularly aggressive, attempting to penetrate the cavalry positions in platoon strength on several occasions, but were successfully repulsed. After holding the line three days the squadron was given the mission of establishing a bridgehead on the far side of the Sinope River.

Because of the extreme frontage of the unit and lack of battle experience the crossing was made by one reconnaissance platoon. The battle wise Germans allowed them to cross and then proceeded to annihilate the platoon. Although the platoon put up a grand fight all but two members were killed or captured. The tank troop was then given the order to cross the river under the protective smoke and artillery of the E Troop assault guns and the combined mortar and machine guns of the reconnaissance troops. A successful crossing was made against a numerically superior enemy that withdrew. However, the doctrine was then and there driven home to all concerned that any river crossings must be made with force, previously coordinated, and of sufficient strength to hold the ground once the crossing is made.

After the bridgehead was firmly established the Germans started a withdrawal north toward Cherbourg. The 24th Squadron was then remounted in their vehicles and assigned the mission reconnoitering north and east along the peninsula to secure bridges before they could be destroyed by the enemy. They were also instructed to determine the main line of enemy resistance and keep contact with it. This was done in order that the infantry could be moved to the area for a full-size attack rather than dissipate its force on small piecemeal attacks. The 24th was able to locate and maintain contact with the enemy. The 4th Division was moved up and successfully attacked. The squadron then was again reconnoitering the east flank of the Division and protecting their supply lines. In the course of the reconnaissance a large airport, manned by a group of young fanatical German air cadets with a large number of dual purpose antiaircraft guns, was by-passed as it was thought that after the airport was surrounded the force would capitulate. This was erroneous and the entire 22d Infantry had to be turned around and a concentrated attack on the airport by the 22d Regiment and the 24th Squadron. After a terrific battle the airfield was overrun. This was a good example of the falaciousness of by-passing strong enemy on the flanks, allowing them to cut supply roads and harass reserves.

The 24th Squadron continued to be attached to the 4th Infantry Division performing flank security until the fall of Cherbourg which marked the fall of the Normandy Peninsula and the close of the Normandy campaign. The 4th Cavalry Group was then assembled at Beaumont Hague about 10 miles west of Cherbourg where they were attached to 101st Airborne Division with the mission of patrolling roads, capturing or destroying all German stragglers, locating all enemy gun emplacements, supplies, and fortifications. The units also assisted civilian authorities in maintaining order. Particular vigilance had been ordered as intelligence agencies had informed the Group that information had been received to the effect that the Germans were planning an airborne offensive in the Cherbourg area to regain the ground they had lost and push the American forces back to the sea. Fortunately no German airborne attack was launched and the units had time to refit, re-equip, and do the necessary maintenance.

The first campaign had drawn to a close, every element of the 4th Cavalry Group had been introduced to warfare in 39 days of intensive combat. The mission for the most part had been dismounted and the fighting at times confused, but though new in combat, organized, equipped and trained for mounted action, the squadrons tackled every mission with determination that made the operations completely successful.

The conclusions drawn at the end of the campaign were that there is no substitute for training. The units must be thoroughly indoctrinated in all phases of war. They must know their weapons, vehicles, radios, they must be able to read a map, they must be thoroughly familiar with tactics from the squad to the squadron. Above all, the units must be physically fit and the leaders are responsible that everyone is possessed with the morale and *esprit* that is necessary to win battles. Without it a unit can go nowhere. Once an outfit is committed, it is too late to learn the basic principles that are laid down by the "Book." These principles must be taught prior to combat and with very few possible exceptions they will pay off.

Armored Division Associations

1st Cavalry Division

General of the Army Douglas MacArthur and General Jonathan M. Wainwright have accepted honorary membership in the 1st Cavalry Division Association, it was announced this month by Major General William C. Chase, president of the Association.

In December the Association mailed its Membership Directory of 105 pages listing all the names and presently known addresses of Association members. The directory is prefaced with letters from General Chase, Major General Verne E. Mudge, Chairman of the Association's Executive Committee, and Major General Innis P. Swift, first president of the Association and former commander of the Division and of I Corps.

Local chapters of the 1st Cavalry Division Association are being formed at Fort Knox, Kentucky, New York, Massachusetts, Illinois, in addition to the one at El Paso, Texas, which is well under way.

Colonel Edmund P. Stone, Registrar of the Association, strongly urges all members to mention their unit or organization in all correspondence with the Registrar's office. His address is: Registrar, 1st Cavalry Division Association, P. O. Box 201, Pomona, California.

Aims and objects of the 1st Cavalry Division Association as set forth on the first page of the new Membership Directory are: "The 1st Cavalry Division Association was organized in the Admiralty Islands with the common aims to perpetuate the fine traditions and the gallant accomplishments of the Division; to provide a suitable memorial dedicated to the memory of our fallen comrades; to the establishment of an endowment program to continue as a lasting reminder in their memory; to preserve and strengthen the fine friendships that found root during our service in the 1st Cavalry Division, and to be mutually helpful to one another in the years which lie ahead."

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3d Armored Division

News item number one for the Spearheaders is the nomination by the President of Brigadier General Doyle O. Hickey to be a permanent Major General. General Hickey commanded "CCA" throughout the training period of the division in the United States and England, and in combat until March 30th, 1944. At the time General Maurice Rose was killed in action, General Hickey assumed command of the division and commanded the 3d Armored throughout the remainder of its combat and occupation duties in Germany.

The Chicago Chapter Spearhead Dance, held at the Knickerbocker Hotel on the 21st of November, was most successful. Art Rutshaw, president of our Chicago Chapter, reports that over one thousand people attended. Chief Garner and Dick Raabe did exceptionally fine jobs on the entertainment committee. Congratulations to the Chicago Chapter; we know they will be grand hosts to our reunion next April.

A New England Chapter Dance will be held for all Spearheaders in that area on January 17th at the Boston City Club, from 8:00 until 12:00. Paul Corrigan, president of the New England Chapter, writes:

"We will have a bar set up for those who want drinks, and an orchestra will be there for the jitterbugs. This is a chance for Spearheaders to show off their buddies to their wives and sweethearts, and vice versa. Tickets are $2.50 per couple. Please do not wait to be contacted—send your money to Paul Corrigan, 77 Green Street, Lynn, Massachusetts. All Spearheaders who read this are urged to contact their buddies whose address we may not have. Make up parties and come and have a grand time. Remember the fun we all had at the last party!"

We had a long letter from Walt Stone of 126 State Street, Boston, telling us about a very successful reunion some of the boys from "A" Battery, 486th, had a little while ago in Boston. Dick Goodie and Herb Reali, both of Portland, Maine, sent out a few post cards to meet at the Silver Dollar Bar in Boston on Sunday, October 12th. As a result forty-three men turned up. We haven't room here to list those present, but New England's every corner was well represented.

Our November Newsletter announced the definite dates of April 8th, 9th, and 10th, 1948, for the first annual Spearhead Reunion in Chicago, Illinois. We have sent out publicity releases to one hundred twenty-five leading newspapers, with the request that they publish the announcement for us. We have mailed out 2500 registration cards to our members, with a request that they send them in at an early date. Despite the fact that most Spearheaders have been busy with the Christmas holidays we have received over one hundred registrations in the first three weeks. Every indication is that there will be at least two thousand Spearheaders at the convention.

If you have not received a registration card please write to the Association headquarters at Fort Monroe without delay. We will send you one by return mail.

* * *

5th Armored Division

September was the first anniversary of the 5th Armored Division Association. Through the efforts of Lieutenant Colonel Fred Ressegieu a correct mailing roster of nearly ten thousand names of the 5th's fighting men has been compiled from information supplied by former members. Lieutenant Colonel Ressegieu left Washington in early fall to attend the Command and

General Staff School at Fort Leavenworth. Since that time Major Emerson F. Hurley has been the acting secretary-treasurer. The records of the association are now in the office of Colonel John T. Cole at the Pentagon.

An excellent history of the 81st Tank Battalion is now being distributed. Information may be secured from C. P. DeBevoise, 5105 Browvale Lane, Little Neck, New York.

The Los Angeles Chapter of the 5th is now second to Chicago in activity and members. Dorsey B. Cole has been acting president, and 50 members attended the last meeting. Cole's address is Box 201, Kruse Road, Pico, California.

The Fifth Armored Division Association will hold its Second Annual Reunion on August 12, 13, and 14, 1948 at the Hotel Carter in Cleveland, Ohio. Thomas B. Bartel, convention chairman, will have a more complete announcement in the next issue of the Division NEWS magazine, which will be out February 1st, 1948.

Louis F. Filas, newly appointed Secretary-Treasurer to the Fifth Armored Division Association, reports from their new location that Chapter activity is high. Newly formed, there is a Cleveland Chapter that will aid in putting over the Association Reunion that will be held in their city in '48.

All Ohio shows progress in anticipation of being hosts to their comrades. Akron and Youngstown also boast of a recently organized group. Information regarding any phase of activity can be had by writing the Association at 4612 Center Avenue, Lyons, Illinois.

The Division History has been finished by Major Emerson Hurley, and will soon be readied for printing.

* * *

6th Armored Division

Definite plans have been made for the first annual reunion of the 6th Armored Division Association in Louisville, Kentucky, on July 30, 31, and August 1, 1948. Arrangements have been made with the Louisville Convention Bureau whereby adequate hotel accommodations, reunion halls, and dining rooms will be made available for all units of the Division who desire to hold reunions in conjunction with the Division reunion. The 68th Tank Battalion and Company B, 9th Infantry have already scheduled their reunions for the above dates.

In view of the fact that personnel on active duty are subject to change of station orders so often, including overseas service, it is the recommendation of the present committees that when permanent Association officers are elected at the annual reunion, they be selected from members now on inactive duty.

The 68th Tank Battalion held their reunion in Chicago on August 30, 1947, the attendance was excellent and everyone enjoyed themselves to the utmost. The schedule included a memorial service, a business meeting, a banquet in the evening and opportunity for buddies to get together and "fight" the war over again.

Local Chapters, "Task Forces," are now being organized. The goal is to initiate a "Task Force" in every city where several Super-Sixers reside. The cooperation of all former members of the Division is urgently needed to make the Task Forces successful organizations. "Task Force Kentucky" has scheduled a business meeting and dinner at the Seelback Hotel in Louisville for the evening of January 17, 1948.

All former unit commanders are being urged to form Unit associations and to schedule their unit association reunions at the same place and on the same dates with the Division reunion.

Inquiries regarding the Association may be addressed to: Lieutenant H. C. Smith, Acting Secretary-Treasurer, 6th Armored Division Association, c/o AGF Board No. 2, Fort Knox, Kentucky.

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11th Armored Division

Thanks to all of you who sent us so many Christmas cards and Holiday Greetings and we sincerely hope that each of you will have a Happy and Prosperous New Year.

For some reason or other, contributions for the "news notes" are rather scarce even though we have diligently solicited information from all the local chapters.

The Cleveland Chapter had its first meeting on December 2 at the residence of Ernie Perlmuter with about 20 fellows present. Charles Starrett was elected temporary chairman. Committees were selected for the housing of the meetings and membership. Practically all members in that area reached by post card stated they were definitely interested in a local chapter and in its future meetings. Another meeting will be held in January—date not yet decided.

A discouraging letter has been received from John Campora who is endeavoring to organize the New Orleans Chapter and it seems like he can't get much cooperation from the members to attend meetings. We hope the next meeting will be more successful. We also hear that "Scotty" Parker is due to be transferred from New Orleans to the Texas area.

Russell V. Bancker (Secretary of the New York Chapter, who is "really on the ball" with news notes) writes us about the clever idea to raise funds for the chapter's use. It seems that one member donated a silver flatware service for 12, another member printed and donated the raffle books and the service is being raffled by the members of the chapter. Results of the sale of tickets so far are very good and they will have their "drawing" at the February meeting. At the December 5 meeting, a generous donation of $25.00 was made to the Christmas funds of both Kingsbridge and Halloran Veterans Hospitals in New York. They hope to establish contacts with the various local newspapers to carry notices of their meetings which they hope will increase their attendance.

John Janecek (Band) of Lincoln, Nebraska, tells us he will be moved into his new house by January 15 and plans to have a meeting of the Eleventh members in that area the middle of February. Says he is going to do his best to get Nebraska organized, to insure a good "corn husker" turnout at the New York convention in August.

We hear from Chicago that Bill Lipp is leaving the Windy City to reside in the New England area. Clarence Torrey is in charge of the Chicago Chapter, pro tem, until another election of officers is held. Incidentally, Torrey is no longer with Eastern but is now Resident Manager for Security Banknotes Company.

Mr. and Mrs. Francis P. Kane, Jr. of Media, Pennsylvania (22 T), visited our office on their way back from Atlanta, Georgia, and he promised to contact Lewis Conine regarding the organization of a Philadelphia Chapter. Edwin L. Dannes (Band) stopped by one day to tell us that he is now one of a "trio" playing at the popular Neptune Room here in Washington. Wilbur J. Spranzy (41 T) of Durham, North Carolina, visited his sister in Washington for Thanksgiving and stopped in to say hello.

General Willard A. Holbrook, Jr. made a flying business trip to the West Coast and then on to Honolulu. He spent a little time while on the trip with "Pete" Kilburn. The only member we had a record of being in Honolulu, Albert G. Oertel (DA), is now working for the Weather Bureau at the Airport in Phoenix, Arizona. General Holbrook says he spent some time trying to locate any other members in Honolulu but could not find any.

Staff Sergeant John Stoughton, Ward Nine, Section Nine, Percy Jones General Hospital in Battle Creek, Michigan would like to hear from any of the gang in the 42 Tank Battalion.

William F. Lightholder wants to know if anyone has any extra copies of the two booklets put out in Austria by the 41 Tank Battalion. He was in the hospital when these were passed out and did not receive either of them. If you will mail them to him at 306 West 15th St., New York, New York, he will be glad to get them.

A letter from Lieutenant Maurice Young, now on duty in Yokohama, says he is looking forward to the time when he can take an active part in the L. A. Chapter, and mentions that Lieutenant Edward J. Garrett (492 AFA) is also stationed in Yokohama.

Major John M. Gaustad, now in Seoul, Korea, writes that he was glad to get the news of the convention and hopes to return from the Orient some time in July, to enable him to attend the next convention in New York. Among the other former members of the Eleventh that he has located in Korea are Major Charles Cherry (Div G-3), Captain Spencer (CCB), Captain McCoy (41 T), and Captain Cooper (55 AIB).

Fred B. Proctor (56 Eng) sends word from Richmond, California, that he is working for a Master's degree in Engineering at the University of California. He also mentioned that Captain Blackburn is now studying dentistry in Columbus, Ohio, and that Lieutenant S. A. Scearce now has a fine job with Standard Oil, after spending two years in the hospital.

A note from Beryl W. Sprinkel (22 T) informs us that he is attending the University of Chicago and that he has seen Zimmer and Bob Blackburn, who are also students there.

Roy Orsolini, Route One, Box 228A, of Lathrop, California, would like to hear from fellows of the 41 Tank.

Theron H. Masten (41 T) of Rapid City, Michigan, writes that he had a "whale of a time at the Chicago convention and wouldn't have missed it for a million." Edwin Lundberg (401 AFA), way out in Ione, Washington, was glad to know it was such a success and is looking forward to the time a convention will be held on the West Coast, a little closer to home.

A card from Robert J. Lewis (133 ORD) lets us know he is now with the Chevrolet Motor Division in Iowa City.

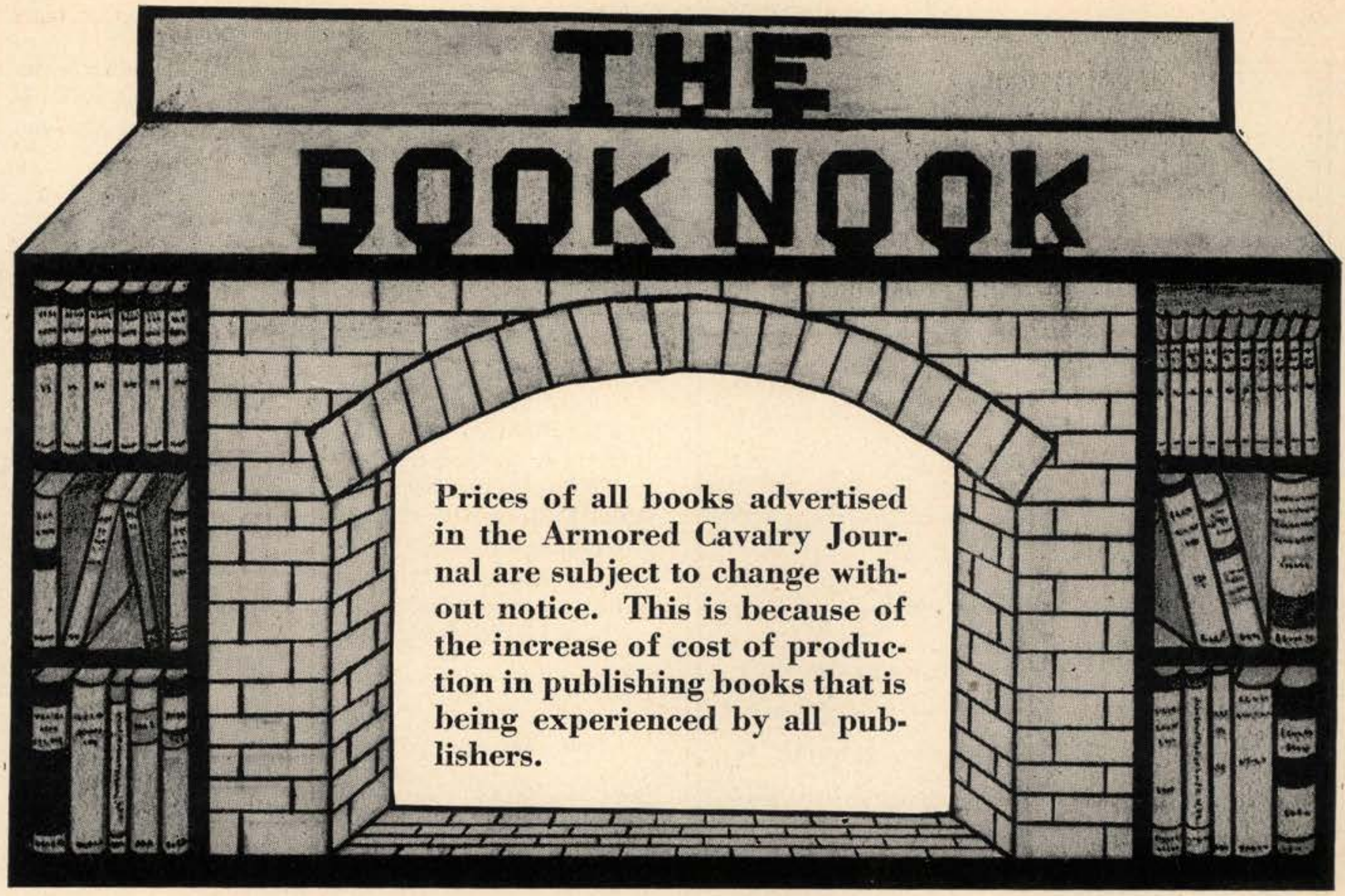
A letter from Leroy H. Richtin (81 Med) says he wasn't aware that the 81 Med was part of the Eleventh Armored Division, but we have given him all the dope on it.

We have received many more letters of good wishes for the association, compliments on the "Newsletters" and of course, a few "gripes" we hope we have taken care of. Again, we ask any and all of you readers to send us any sort of "news" that you think other members might be interested in reading.

We have just received a letter advising us that at the meeting of the Los Angeles Chapter on November 25th, the following officers were elected for the 1948 term: William Cohen, President—Col. W. J. Scott, Vice President—T. R. Anderson, Secretary—Isaac Kramer, Treasurer. Willard N. Rayburn, F. W. Hunter and Charles B. Moore were named as Trustees for the Chapter. They also appointed a membership committee, headed by Isaac Kramer, to promote an extensive membership campaign by mail. Yearly dues will be $5.00 of which $4.00 will go to the local chapter and $1.00 to the National Association. The next meeting of the Los Angeles Chapter will be held on January 13th at Betty's Broadway Circle at 1016 South Broadway in Los Angeles at 8:00 P.M. and we sincerely hope they have a grand turnout for the meeting. They expect to have definite figures on their membership after the January meeting.

Miss Natica A. Brown, who handles all administration of the Association, wants to thank the many thoughtful Thunderbolts who sent her Season's Greetings.

* * * *



Prices of all books advertised in the Armored Cavalry Journal are subject to change without notice. This is because of the increase of cost of production in publishing books that is being experienced by all publishers.

THE BLUE DEVILS IN ITALY. By John P. Delaney. Infantry Journal Press. $5.00.

Most Army unit histories follow the same general pattern, and their interest is limited to those who served with the respective organizations, and to students of military history. There is wider interest in *The Blue Devils In Italy,* the history of the 88th Infantry Division, a timely release available as the last elements of the organization are returning to the States in the withdrawal of all troops from Italy, Mr. Delaney has covered a good portion of the Blue Devil occupation of one of the world's key trouble spots. There is additional interest in the tie-in of this story with the continuing mission of the 5,000-man Blue Devil Brigade remaining on in the Trieste Free Territory. This is an important book to American citizens who wish to keep in touch with our outposts of democracy.

* * *

EQUESTIONNAIRE. By Colonel Harry Disston; Illustrations by Paul Brown. A. S. Barnes & Company. $3.00.

For those who have said "What I don't know about a horse would fill a book," the book they are speaking of is Colonel Disston's *Equestionnaire.* This is an entertaining and instructive compilation of facts about horses. It is divided into sections covering such subjects as anatomy, stable management, first aid and shoeing, tack and equitation, hunting, racing, polo, horse shows and several others, all presented in a question and answer form. Paul Brown's drawings are fine as always, and serve as graphic presentations of many of the author's points. A book for all who want information on things concerning horses.

CAR OWNER'S GUIDE TO CARE AND REPAIR. By Walter Altschuler. Tudor Publishing Company. Paperbound, $1.50; Cloth, $3.00.

A more down-to-earth offering for the average car owner on how a car is put together, with information as to how and when to do something to prolong its life. Contains helpful illustrations and easily understandable text.

* * *

THE MEANING OF TREASON. By Rebecca West. The Viking Press. $3.50.

There are many tangents to the tragedy of war. In her book *The Meaning of Treason,* Rebecca West has enlarged on the treason theme, a story of several English traitors of World War II. Bulk of the book is devoted to William Joyce, the famous Lord Haw Haw, whose propaganda broadcasts bombarded the English air waves during the war. There is also the account of the trial of John Amery. Miss West probes very deeply into background on the human side.

* * *

THE FOREIGN AFFAIRS READER. Edited by Hamilton Fish Armstrong. Harper & Brothers. $5.00.

This is a compilation of twenty-nine articles extracted from the quarterly publication, *Foreign Affairs.* All military personnel should read it as a part of their grounding in foreign affairs. Presented here are articles by outstanding men of this and other countries on a range of subjects that provides a real appraisal of the between-the-wars period, pointing up an understanding of some of our present-day problems.

THE HORSE of the DESERT

By W. R. BROWN

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The Horse of the Desert, written by America's greatest authority on the subject, is the only book on the Arabian horse now in print. It contains an extensive list of the principal Arabian tribes, subtribes and clans; the most complete and authoritative lists of the strains and families of the Arabian horse; the largest bibliography on the subject; a map showing the regions most suitable for breeding horses in the United States, and the Arabian ancestry of most of the present-day breeds.

Lavishly illustrated with about 200 reproductions of drawings, photographs, paintings and four-color plates.

Author W. R. Brown was president of the Arabian Horse Club of America for many years, and a member of the United States Remount Council. He has travelled extensively in the Arabian Desert in search of fine horses, and has handled more Arabians than anyone in America.

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Armored Cavalry Journal

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THE GHOSTS OF PATTON'S THIRD ARMY: A HISTORY OF THE SECOND U. S. CAVALRY. By Major A. L. Lambert and Captain G. B. Layton, Historical Section, Second Cavalry Association. $3.00.

This is a comprehensive history of the Second Cavalry, and its World War II contemporaries will enjoy reading of the rich tradition of their outfit, from the engagement of the Second Dragoons at Oloklikaha on the Withlacoochie River in the Seminole Indian Wars in Florida in the year 1836, on through the postwar duty as Constabulary troops in Germany. Most interesting will be the section in which the reader helped write the history of this unit through his active service as a member—the combat period from the landing on the Normandy Beachhead on through the fighting in France and Germany, and across the Czechoslovak border to a VE blessing in the Pilsen area. As a cavalry unit in a cavalryman's Army, the Second Cavalry saw plenty of action, and the story, spiced by the contributions of many of those who lived it, makes fine reading.

* * *

OURS TO HOLD IT HIGH: HISTORY OF THE 77TH INFANTRY DIVISION. Edited by Lieutenant Colonel Max Myer. Infantry Journal Press. $6.00.

This book tells the history of the well-known Pacific division that made contact with the famous 1st Cavalry Division at Lonoy, Leyte, to break the back of the Yamashita Line and bring the Leyte Campaign to a successful close.

The book is the complete history of the 77th Division's World War II activities.

* * *

SILVER KINGS. By Oscar Lewis. Knopf. $4.00.

A story of the four leading figures in the exploitation of the famous Comstock Lode silver mines in Nevada. We recommend it as good background on America.

* * *

AMERICA IN PERSPECTIVE. Edited by Henry Steele Commager. Random House. $4.00.

Some three dozen foreigners express their views on Americans in this compilation of essays by one of our better known historians.

* * *

THE UNITED STATES AND RUSSIA. By Vera Micheles Dean. Harvard University Press. $3.00.

With a foreword by Sumner Welles, this is a book for all interested in one of the major problems of the day. Miss Dean is a recognized specialist on Russian affairs.

* * *

NEWS LETTERS OF ABIGAIL ADAMS. Edited by Stewart Mitchell. Houghton Mifflin. $5.00.

Mr. Mitchell of the Massachusetts Historical Society has compiled here 141 letters written by the wife of John Adams to her sister during the period in which her husband served as Vice President and President.

LEWIS AND CLARK. By John Bakeless. William Morrow & Company. $5.00.

Always popular are the stories of the American West in the days when a handful of brave adventurers were pushing forward our frontier. Mr. Bakeless has given us the story of two of the most intrepid of our frontiersmen on the expedition that was to probe our wilderness and strike the Pacific coast. A detailed story with excellent maps, illustrations and photographs.

* * *

WIRING A CONTINENT. By Robert Luther Thompson. Princeton University Press. $7.50.

More background on America. This is a subject with which many of us are casually familiar, either through our school courses or in popular movies, but this treatment is more detailed and objective, and is basic Americana.

* * *

THE MUZZLE-LOADING CAP LOCK RIFLE. By Ned H. Roberts. The Military Service Publishing Company. $7.50.

For gun collectors and anyone interested in firearms and shooting, here is a book to satisfy a technical demand, and one with the additional value of fine story-telling.

* * *

THE STAINLESS STEEL KIMONO. By Elliott Chaze. Simon & Schuster. $2.75.

Mr. Chaze has written a story of a group of postwar occupation soldiers on duty in Japan, not a real account of any particular real-life figures, but a story of many of our occupation men today. It is a good story, at once humorous and grim.

* * *

TIME AND CHANCE. By Cyrus LeRoy Baldridge. The John Day Company. $7.50.

Here are 432 pages of sketches and copy by an author-artist whose young life was of a footloose nature of necessity, and whose later life sustained the wanderings by choice. The broad outlook pays off in a worth-while result.

* * *

THE SIERRA NEVADA. Edited by Roderick Peattie. The Vanguard Press. $4.50.

All angles are covered in this story on one of the world's most beautiful mountain ranges; birds, trees, flowers, climbs, sports, geology, characters. When you have finished you'll want to go West.

* * *

F. D. R., HIS PERSONAL LETTERS: Early Years. Edited by Elliott Roosevelt. Duell, Sloan & Pearce. $5.00.

A collection of letters of the late President Franklin D. Roosevelt to his mother, covering the period of his life from early childhood through his graduation from Harvard. The first of three volumes.

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By GENERAL GEORGE S. PATTON, JR.

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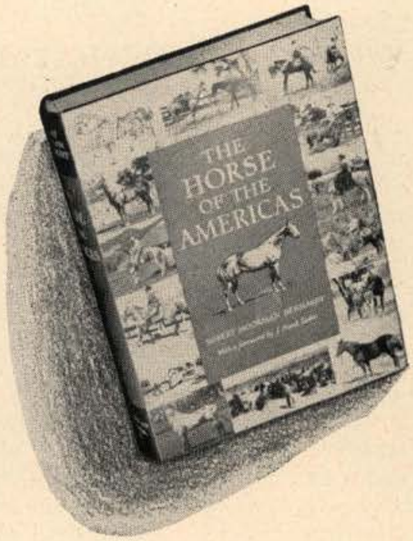
By ROBERT M. DENHARDT

THE HORSE OF THE AMERICAS

Foreword by J. FRANK DOBIE



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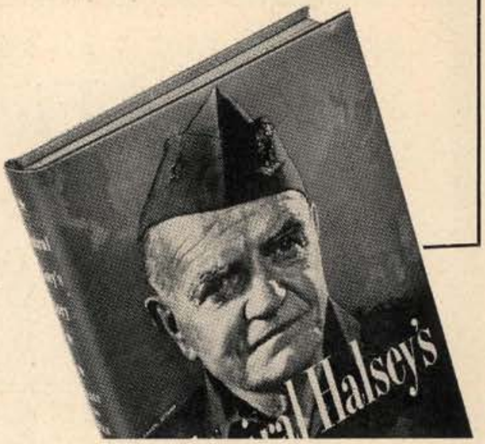

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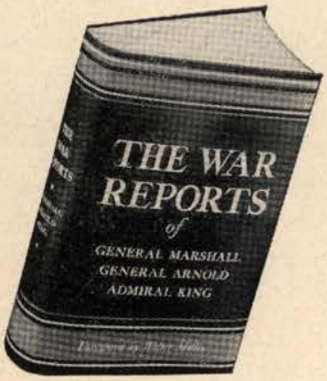
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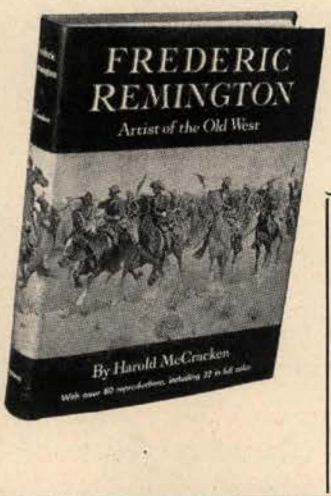

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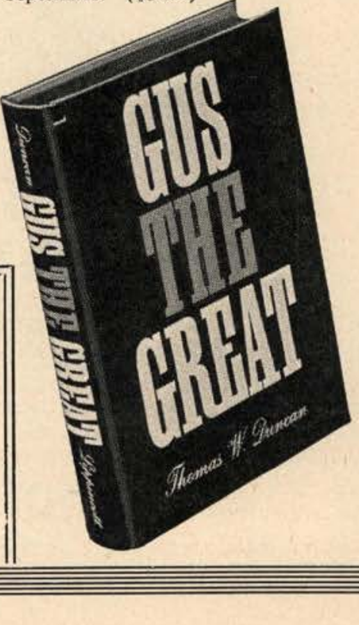

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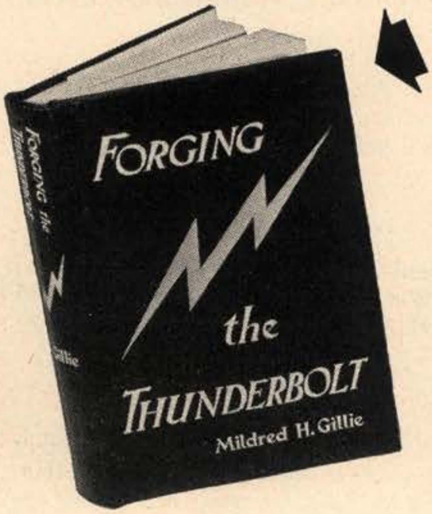
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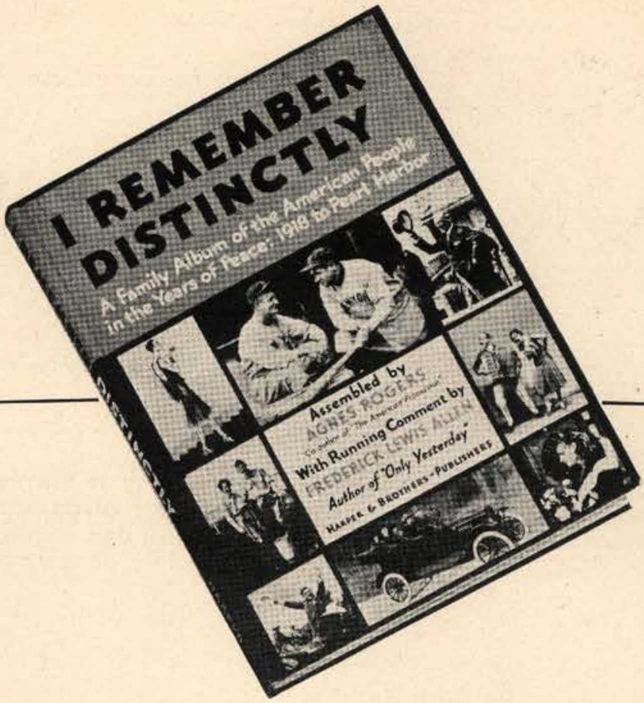
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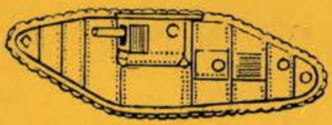

OCT 9 - 1948

GENERAL HEADQUARTERS
SUPREME COMMANDER FOR THE ALLIED POWERS
OFFICE OF THE SUPREME COMMANDER

From Tokyo I send the Armored Cavalry Journal my warm congratulations upon its fulfillment of sixty years of distinguished service in keeping the military profession abreast of the advance of the cavalry arm in the art of war. During these decades no other branch has experienced greater change in weapons, in technique, and in tactical requirement. Discarding the horse and the saber to keep pace with the increasing tempo and violence of modern war, the cavalryman speedily adjusted himself to armored mechanization and commensurate fire power, firmly to hold his historic role of the far-flung and rapid movement echelon. In this he demonstrated with striking clarity that the invincible esprit which has characterized his past yet carries him to the vanguard of every advance, an irresistible force toward victory.

Douglas MacArthur

DOUGLAS MacARTHUR.

MARCH-APRIL, 1948

1888 - SIXTIETH ANNIVERSARY - 1948

The Armored Cavalry Journal
celebrates its
60th Anniversary

Message to Armored Cavalry Journal
From
The British War Office
Whitehall, London, S. W. I.

In sixty years the world has come a very long way. In its sixty years' active, adventurous lifetime, "Armored Cavalry Journal", with the arm whose mouthpiece it is, has come just as far—all the way from horses on the Indian frontier to tanks and armored cars on the battlefields of Europe, Africa and Asia. Long ago their British comrades-in-arms learnt to rate the U.S. Cavalry very highly. Fighting side by side, everything they have seen has taught them a warmer admiration for American dash, toughness and skill. By keeping its readers in touch with the best of the past and informed about the best of the present "Armored Cavalry Journal" has helped to preserve and strengthen those splendid soldierly qualities. Its British Army readers have reason to be grateful to it for frequent inspiration from the American record, and for the friendly candour with which it has made British problems familiar in the United States. They wish it a second sixty years of usefulness and success as brilliant as the first.

MARCH 1888 - MARCH 1948

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Armored Cavalry Journal

Published Bimonthly by The U. S. Armored Cavalry Association

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Volume LVII MARCH-APRIL, 1948 Number 2

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Publication date: March 25, 1948. Deadline date, next issue: April 15, 1948.

THE ARMORED CAVALRY JOURNAL IS NOT RESPONSIBLE FOR OPINIONS EXPRESSED IN PUBLISHED CONTRIBUTIONS

Publication offices: 1406 East Franklin Street, Richmond, Virginia. Editorial offices: 1719 K Street, Northwest, Washington 6, D. C. Copyright, 1948, by the U. S. Armored Cavalry Association. Entered as second class matter at Richmond, Virginia, under the act of March 3, 1879, for mailing at special rate of postage in Section 412, Act of October 3, 1917. Terms: Domestic subscriptions, individual and organization (military or civilian), $3.00 per year. Foreign $3.50 per year. Canada: including War Exchange Tax, $3.50. All subscriptions payable in advance. Single copies, 75c. Extra copies to subscribers, 50c. The ARMORED CAVALRY JOURNAL *does not* carry paid advertisements.

VOLUME I., NO. I.

by Captain William Gardner Bell
Associate Editor, Armored Cavalry Journal

THE Custer incident on the Little Big Horn was a dozen years in the past. Not a full two years before, elements of the Fourth Cavalry had rounded up Nachez and Geronimo, troublesome Apache Chieftains. Across the land settlement was going forward apace, and the United States Army was active in guarding and operating stage lines, safeguarding the settlers, controlling the Indians on reservations, restricting the depredations of desperadoes and influencing calm in labor troubles. Bracketing years would log incidents in Frontier history involving the Crows, Piegans, Sioux and Bannocks, spotlighting the Department of the Dakota and twilighting Indian disturbances. Through the impetus of the Service School at Fort Leavenworth, a desire was springing up for more specialized and professional learning in the various branches of the Army. Members of the Cavalry Association decided to publish a Journal. Thus The CAVALRY JOURNAL came into being: thus the year 1888 passed into history.

With the formation of the United States Cavalry Association in 1885, Article Ten of the Constitution had paved the way for a Journal. The Association had as its design the professional improvement and the advancement of the cavalry service generally. To serve this aim, members read and discussed papers on a variety of subjects at meetings. The printed record of those papers and discussions formed the basis for the first CAVALRY JOURNAL.

Volume One, Number One came off the steam presses of Kecheson and Reeves at Leavenworth, Kansas, in March of 1888. It was received with generous press comment from many sources, including, among others, *The Epoch, The Nation, Army and Navy Journal, The Guardsman, U. S. Naval Institute Proceedings,* England's *Journal of the Royal Service Institute,* and France's *Revue de Cavalerie.*

Due to the widely dispersed membership of the Cavalry Association, and the conditions of the period, the Central Headquarters at Fort Leavenworth was supplemented by Branches of the Association. In 1888, upon publication of the first JOURNAL, branches were located at West Point, New York, and at Fort Reno, Indian Territory. Each of these was presided over by a Vice President and Secretary. Proceedings of Association meetings reached these branches in Journal form.

First President of the Cavalry Association upon its formation in November of 1885 had been Colonel Abraham K. Arnold. The first President to appear on the masthead of the JOURNAL was General Wesley Mer-

Sixty years ago the Armored Cavalry Journal began publication. Its life as a Service Journal has been a full and useful one. As the organ of the Armored Cavalry Association it carries on the original design—the professional development and general advancement of the Service.

ritt, whose name was to remain there during the nearly twenty years of his election to the post. The group of Honorary Members for that period was an imposing one: General William Tecumseh Sherman, General Lew Wallace, General Phillip St. George Cooke, General William S. Harney, Governor Fitzhugh Lee and the Honorable Joseph Wheeler and J. C. Ropes of Congress.

The first issue of the CAVALRY JOURNAL carried a diversity of contents. Several of the subjects were of a highly controversial nature and were not resolved until many years later. The items embraced some German Ideas on Cavalry, Remounts, The New FA Gun, The Use of Arms Mounted, Sabers or Revolvers, The Kelton Devices, Marching Cavalry, Mounted Fire Action of Cavalry, Dismounted Service of Cavalry and, finally, The French Cavalry.

In the latter pages of that first issue there appeared the Constitution and By-Laws of the Association, backed by the roster of Officers of the Association and a list of members. To round out the magazine the closing pages contained a selection of military works available to members through the Association, a service continued down through the years.

Early issues of the new publication were the work of a Committee on Publication and Correspondence composed of three officers. There was no Editor, as such. No schedule of publication was planned. Rather, the JOURNAL was to be published when sufficient material had been gathered to build one issue. However, one year after the start of publication a quarterly basis was established. This was to change periodically, for various reasons, through the years to come.

There were several difficult periods in the JOURNAL's life. Perhaps the greatest pinch came when all officers connected with publication were called to the front during the war with Spain. In this period only one issue was published for the years 1898 and 1899 respectively. From 1899 the lapse extended to 1902, during which period the continuation of the JOURNAL was in great doubt, and there was a proposal to abandon publication. A letter from General Merritt, written at sea aboard the Steamer *Friedrich Der Grosse,* plus the efforts of some Association members, instilled the necessary life for the resumption of publication in July of 1902.

First credit for Editorial work is granted to Captain Otto L. Hein, Secretary-Treasurer of the Association, in the form of a motion of thanks at a meeting. The first designated Editor appears to have been Major (later General) Camillo C. C. Carr. Although the title is not indicated in the issues of the period, Major Carr made it a point to go through several copies, carefully appending his name to indicate credit due.

As the completion of a decade of publication approached the CAVALRY JOURNAL broadened its policy to include advertising. In June of 1897 there appeared at the back of the issue several pages assembled into the JOURNAL Shopping and Business Directory. To subscribers went this blurb: "The firms represented in the following pages are recommended to your consideration. Only houses known to the management of the JOURNAL to be reliable ones are accepted. (Footnote 1948: Ah! What blissful days!) Appropriately enough the leading advertiser was a Military Outfitter in Columbus, Ohio.

Also represented in that section was a full page spread laid in delightful frills, woven about the intelligence of a drink called Braunschweiger Mumme, a concoction sounding suspiciously like a beverage of Hitler Associates. Further reading discloses a nutrient tonic, liquid malt extract, palatable and nourishing, a creator of appetite, an aid to digestion and recommended by physicians.

Next in line came a Home Treatment for Liquor, Morphine and Tobacco Habits—the 30-day treatment.

Several familiar names were scattered throughout this advertising section, among them Schlitz and Brentano. All of which indicates what a nice cooperative spirit existed in the early years. The pinch was on in the thirties when the lawmakers put the axe to the carrying of advertising by service journals with duty personnel on the staffs. Today we sit by, weaving dreams of the out-of-the-world service journal we could supply to our readers and our branch with the revenue from advertising. As things stand we dare not approach a plug for Government Farm stud service, much less the bald copy of an ad in the year 1897 in this very JOURNAL, quote: "The Best Brand of Whiskey and the Finest Wines in use at the Fort Leavenworth Officers' Club are supplied by the Brotherhood Wine Company." Unquote!

There was perhaps a bit more refinement and a little more rank in the ad of the States distributor for Moet and Chandon Champagne back in 1902, from a position on the inside front cover of the JOURNAL. Leading the list of the heads of four governments who dished out this product exclusively at lavish affairs of state was the statement that "at the White House in Washington at the banquet to H R H Prince Henry of Prussia, the President of the United States served ONLY this champagne!"

The cover of the CAVALRY JOURNAL during its first several years of publication was quite plain, containing the table of contents sided by a simple sketch of guidon, bugle and saber. At the turn of the century this gave way to a somewhat stiff drawing of a mounted cavalryman. Following the difficult Spanish War period, the JOURNAL was to undergo a real face lifting through the kindness of artist Frederic Remington, a life member of the Association.

In 1898 Remington had gone to the camp of the Third Cavalry at Tampa, Florida, to visit a friend, Captain F. H. Hardie, then commanding Troop G of the Third. While there he saw and was struck with the appearance of one of Captain Hardie's men, Sergeant Jack Lannen. Visualizing him as a perfect type of American Cavalryman, Remington made several sketches of him in front of Hardie's tent, and these along with several photos inspired a finished drawing which was presented to the CAVALRY JOURNAL in 1902. In January of 1903 this sketch appeared on the cover of the JOURNAL, where it was to remain for almost forty years. Sergeant Lannen sailed with the Third for Santiago shortly after posing where he died of yellow fever, ending a thirty-three-year army career. Of three spellings of the name, the above is used as being correct, having been provided from the records of Troop G in 1911.

Somewhere back through the years the sketch acquired the title "Old Bill," and so our cavalryman is known today. For the cavalry Old Bill has become a symbol. It was with a certain regret that in 1942 Old Bill rode off the cover of the JOURNAL, prodded by the spurs of progress. Today he sits his mount on the back cover, a firm support to the strong tradition of a proud service.

It's interesting to trace the names of Army families in the JOURNAL through the years. Prominent during sixty years of publication are such names as Henry, Holbrook, Chaffee and Howze, to note only a few familiar in cavalry and Army circles. The career of many of our top Army figures may be followed in a progressive reading of the CAVALRY JOURNAL through its sixty years of publication. Year by year the writings of such prolific authors as Malin Craig, James Harbord, George Patton and Lucien Truscott appear under junior and through progressively higher grades. Over all, many top Army men contributed to the pages of the JOURNAL. The year 1931 alone brings to light articles by such familiar persons as John Pershing, Dwight Eisenhower, George Van Horn Mosely, Herman Beukema, Johnson Hagood, Hamilton Hawkins, Guy Henry, Walter Short, C. P. Summerall and a variety of others perhaps less well known. There has been a good sprinkling of material from outstanding foreign military leaders. Editorship of the JOURNAL has been capable.

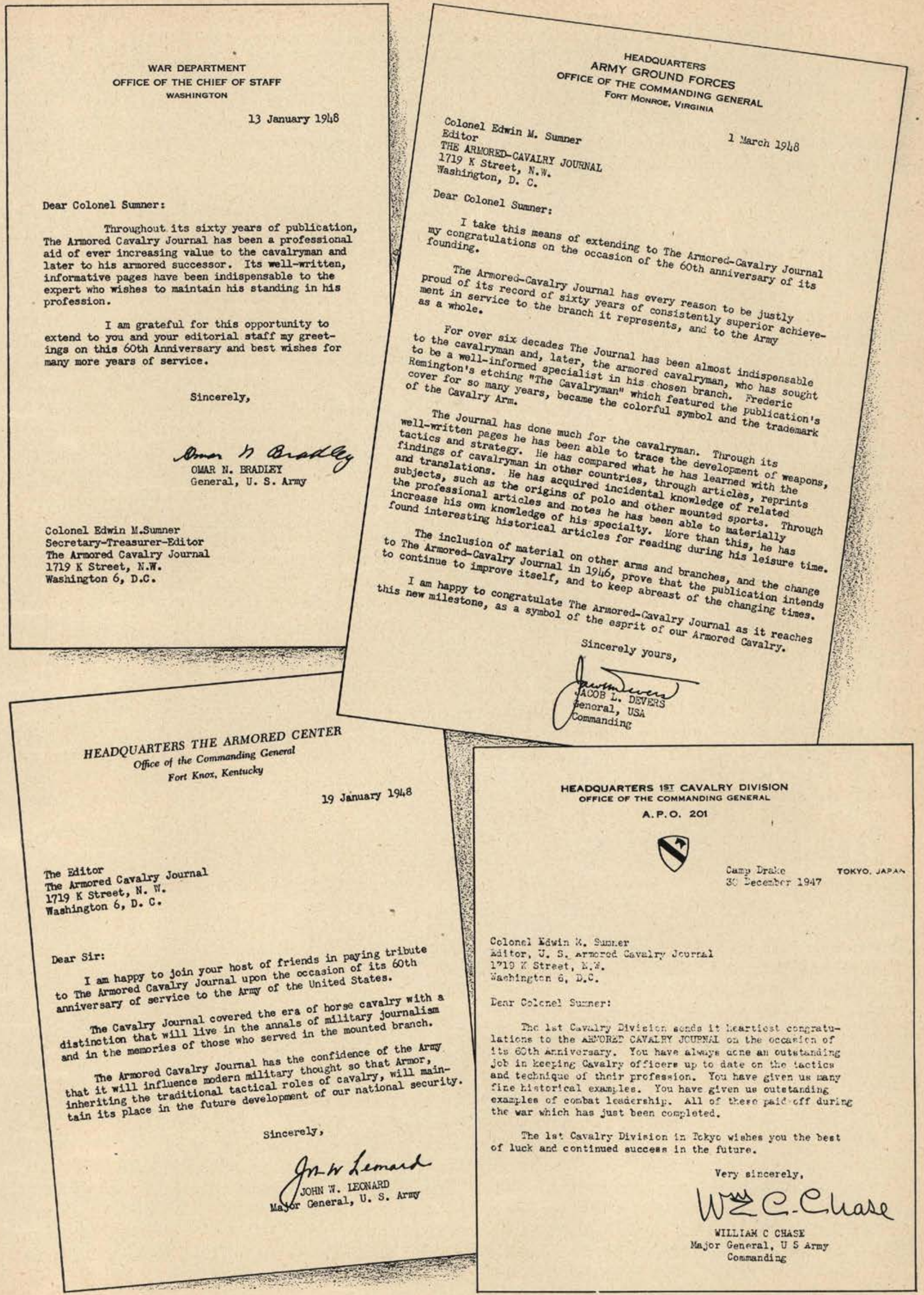
Rotation of the Editorship has been frequent in the life of the JOURNAL, the result of the exigencies of the military. Today is no different. There has recently been a change in Associate Editorship. Another change will come shortly with the retirement in August of the present Editor, Colonel Edwin M. Sumner. At this writing his successor has not been designated.

Changes in format, several of which have been mentioned, have occurred periodically in the existence of the CAVALRY JOURNAL. Highlights touched the years 1903, 1920, 1931, 1942 and 1946. In 1942 Old Bill left the cover to be replaced by a photograph. This first photo was a late training shot of the Philippine Scouts. The forerunner of things to come was the Fall of '42 shot showing a view from inside a General Grant tank of armor in action on the Libyan Desert.

Old Bill missed out on several issues, but in 1943 he took his post on the back cover while the front set the pace with pictures of tanks and George Patton.

The war brought with it the final transition from horse to mechanization, and the CAVALRY JOURNAL kept pace. Articles and pictures depicted armored action. Cavalrymen underwent the transition to mechanization and armor. A traditional arm evolved a new method to acquit a traditional mission. In July of 1946 the Cavalry Association held a special Executive Session in the Editorial Office of the JOURNAL. Resolved, that the Cavalry Association shall become the Armored Cavalry Association, and the JOURNAL shall become The ARMORED CAVALRY JOURNAL. It was a forward-looking step. A letter from General Devers centered the new makeup of the ARMORED CAVALRY JOURNAL's cover.

How unfortunate that Frederic Remington could not have lived to see the transition of the service which his talent and high interest glorified in pen and brush. Had he been alive today there is small doubt that this article, so enriched by a lead sketch reproduction of his famous *Pony Tracks In The Buffalo Trails,* might have been brought to a close with perhaps a sketch titled *Tank Tracks on the Bogey Wheels,* in which Old Bill, his torso projecting from the turret of a Mark 3000 monster, is seen floating to earth in an airborne-armored invasion. Who can imagine the report of publication on the 120th Anniversary of The ARMORED CAVALRY JOURNAL?



WAR DEPARTMENT
OFFICE OF THE CHIEF OF STAFF
WASHINGTON

13 January 1948

Dear Colonel Sumner:

Throughout its sixty years of publication, The Armored Cavalry Journal has been a professional aid of ever increasing value to the cavalryman and later to his armored successor. Its well-written, informative pages have been indispensable to the expert who wishes to maintain his standing in his profession.

I am grateful for this opportunity to extend to you and your editorial staff my greetings on this 60th Anniversary and best wishes for many more years of service.

Sincerely,

Omar N. Bradley
OMAR N. BRADLEY
General, U. S. Army

Colonel Edwin M.Sumner
Secretary-Treasurer-Editor
The Armored Cavalry Journal
1719 K Street, N.W.
Washington 6, D.C.

HEADQUARTERS
ARMY GROUND FORCES
OFFICE OF THE COMMANDING GENERAL
FORT MONROE, VIRGINIA

1 March 1948

Colonel Edwin M. Sumner
Editor
THE ARMORED-CAVALRY JOURNAL
1719 K Street, N.W.
Washington, D. C.

Dear Colonel Sumner:

I take this means of extending to The Armored-Cavalry Journal my congratulations on the occasion of the 60th anniversary of its founding.

The Armored-Cavalry Journal has every reason to be justly proud of its record of sixty years of consistently superior achievement in service to the branch it represents, and to the Army as a whole.

For over six decades The Journal has been almost indispensable to the cavalryman and, later, the armored cavalryman, who has sought to be a well-informed specialist in his chosen branch. Frederic Remington's etching "The Cavalryman" which featured the publication's cover for so many years, became the colorful symbol and the trademark of the Cavalry Arm.

The Journal has done much for the cavalryman. Through its well-written pages he has been able to trace the development of weapons, tactics and strategy. He has compared what he has learned with the findings of cavalryman in other countries, through articles, reprints and translations. He has acquired incidental knowledge of related subjects, such as the origins of polo and other mounted sports. Through the professional articles and notes he has been able to materially increase his own knowledge of his specialty. More than this, he has found interesting historical articles for reading during his leisure time.

The inclusion of material on other arms and branches, and the change to The Armored-Cavalry Journal in 1946, prove that the publication intends to continue to improve itself, and to keep abreast of the changing times.

I am happy to congratulate The Armored-Cavalry Journal as it reaches this new milestone, as a symbol of the esprit of our Armored Cavalry.

Sincerely yours,

JACOB L. DEVERS
General, USA
Commanding

HEADQUARTERS THE ARMORED CENTER
Office of the Commanding General
Fort Knox, Kentucky

19 January 1948

The Editor
The Armored Cavalry Journal
1719 K Street, N. W.
Washington 6, D. C.

Dear Sir:

I am happy to join your host of friends in paying tribute to The Armored Cavalry Journal upon the occasion of its 60th anniversary of service to the Army of the United States.

The Cavalry Journal covered the era of horse cavalry with a distinction that will live in the annals of military journalism and in the memories of those who served in the mounted branch.

The Armored Cavalry Journal has the confidence of the Army that it will influence modern military thought so that Armor, inheriting the traditional tactical roles of cavalry, will maintain its place in the future development of our national security.

Sincerely,

Jno W Leonard
JOHN W. LEONARD
Major General, U. S. Army

HEADQUARTERS 1ST CAVALRY DIVISION
OFFICE OF THE COMMANDING GENERAL
A.P.O. 201

Camp Drake
30 December 1947
TOKYO, JAPAN

Colonel Edwin M. Sumner
Editor, U. S. Armored Cavalry Journal
1719 K Street, N.W.
Washington 6, D.C.

Dear Colonel Sumner:

The 1st Cavalry Division sends it heartiest congratulations to the ARMORED CAVALRY JOURNAL on the occasion of its 60th Anniversary. You have always done an outstanding job in keeping Cavalry officers up to date on the tactics and technique of their profession. You have given us many fine historical examples. You have given us outstanding examples of combat leadership. All of these paid off during the war which has just been completed.

The 1st Cavalry Division in Tokyo wishes you the best of luck and continued success in the future.

Very sincerely,

Wm C. Chase
WILLIAM C CHASE
Major General, U S Army
Commanding

U.S. CAVALRY ASSOCIATION
U.S. CAVALRY JOURNAL
JOURNAL
U.S. Cavalry
Association

EDITO

1888

THE PAST

The Big Picture

This Journal has a broad purpose. It has a scope that implies a wide responsibility. Do we recognize and meet our responsibilities? We feel that we do!

Armored Cavalry

Chief among our commitments is the supplying to our readers of an active medium for the discussion of military affairs. More specifically, our attention is directed upon the special field from which our Association and publication draw their names—Armored Cavalry. We aim at an organ that supplies our members with balanced information on the history, achievement, opinion, technical advancement, personalities and what have you in the Armored Cavalry world.

That world breaks down, as it were, into two hemispheres, thereby shouldering us with a dual responsibility in a seemingly single role. We have two entities fused into one; a natural blend resulting from the normal course of progress.

To faithfully acquit our responsibilities we put into the pages of the Journal a balance of material designed to meet the need. In compiling that material the need demands that the emphasis be placed upon armor and mechanized cavalry, the modern tools that serve our traditional cavalry mission. However, in pacing the trend we would be in default if we did not consider the rich history, tradition, accomplishment and continuing value of the horse and horse cavalrymen to our Armed Forces. With this in mind we continue to offer a general fare in our pages.

The CAVALRY JOURNAL
APRIL 1920
CAVALRY JOURNAL
CAVALRY JOURNAL

Other Branches

The section of the Journal devoted to Other Branches is our answer to the basic obligation of supplying adequate intelligence on all components of the forces team. Understanding must be all-embracing, and not limited to a single branch.

Backing up our description of the respective branches by their Chiefs is our regular coverage of all of the arms and services. We reach out to unlimited boundaries, with a variety of material on Air Corps, Navy, Marines, National Guard, Organized Reserve, Guided Missiles, the Atomic Bomb, Research and Development. But we do not stop here.

The Industrial Side

One side of any picture is the halfway mark only. What of the other half?

Our national security has assumed a new complexion to us as the result of the recent war. That war caught us in a critical state of unpreparedness. Only the delaying action of our allies on the fighting front gave us the respite necessary to marshal our armed strength and to activate our production potential in support of full operation against our enemies.

Advancement in the field of research proportionately nullifies the slight advantage this country possessed in the form of its buffer of distance against enemy attack on home shores. Matured by the impact of our recent experience, and cognizant of the demands of the future, our country has in imple-

RIALS

1948

THE FUTURE

ARMORED CAVALRY JOURNAL
Greetings to: ARMORED CAVALRY JOURNAL
THE CAVALRY JOURNAL
THE CAVALRY JOURNAL

mentation a program of preparedness which recognizes the relation of industry to readiness. This places industry on the same team with the military as a factor of security. In the strong belief that the right hand should know what the left hand is doing, the ARMORED CAVALRY JOURNAL feels called upon to keep you posted on industrial developments. Members of the Armed Forces should make it a duty to acquire a knowledge of industry's role in our security planning parallel to their knowledge of the services. To aid you in becoming conversant with the aims and the program of industry in its part in our Government's coordinated defense plan, the ARMORED CAVALRY JOURNAL will offer from time to time selected articles by qualified writers, designed to give you the full picture.

WORLD RESPONSIBILITIES

The American Soldier is serving on many scattered fronts throughout the world. In garrisoning our outposts of democracy he is one of the more potent instruments of our foreign policy. Our soldier is carrying out his duties under the eyes of many peoples speaking a variety of languages and inhabiting widely scattered sections of the universe. His service brings him into direct contact with the soldier of many other nations. His presence and his actions are translated inevitably into the expression of his country. As an instrument of foreign policy the American soldier is the representative of the ideology of his country, its government and its people. He comes into contact with opposing ideologies. His ability to meet differences properly and to react properly depends upon his understanding of what he is up against and his instruction as to the appropriate reaction.

Prior to the late war Americans generally were somewhat undeveloped along lines of international consciousness. Today we have hundreds of thousands of past or present members of our Armed Forces whose vision and interest have been broadened by service outside of our country. We have seen and analyzed things, and we are better equipped to meet our present-day world responsibilities.

Knowledge of foreign affairs is essential to competent soldiering and good citizenship. To promote that knowledge the JOURNAL will attempt to bring its readers some of the objective material covering world politics.

INTERNATIONAL RANGE

Finally, the ARMORED CAVALRY JOURNAL is a publication of international scope and flavor. We go far afield in our search for the ingredients to compound a technical, useful magazine. Within our pages have appeared articles on foreign armies, tactics and equipment; within our pages have appeared many articles by foreign writers. International circulation, international quotation and international recognition are the measure of our product.

THE FUTURE

Our desire is to continue the publication of a JOURNAL that has scope, vision and appeal; one that satisfies the likes and requirements of our readers. General comment reaching the Editorial Office indicates an increasing fulfillment of that wish. This Sixtieth Anniversary Edition of the ARMORED CAVALRY JOURNAL seems to provide an appropriate opportunity for us to reaffirm our intentions by dedicating our future to continued service to our readers to the very peak of our abilities.

THE CAVALRY JOURNAL
WE MUST HAV
CAVALRY JOURNAL
CAVALRY JOURNAL

CARDED

WE FOUGHT AT KASSERINE

The Fifth Anniversary of the Battle of Kasserine Pass has been marked by important releases from several top Allied sources. The sum of the retrospect is none too favorable to our High Command in the Tunisian Campaign. Here is an on-the-spot report of a Battalion Commander in the Kasserine Operation.

SUCH headlines as "U. S. Tanks Fling Back Picked Fighters," "Angry Yanks Rout Rommel" and "American Troops Take Kasserine" filled the home papers during the latter part of February in 1943. As a result of these stories, the public generally came to regard the Battle of Kasserine as a great American victory. The popular conception of the battle seems to run something like this: Our troops, because of their greenness and inexperience, first took a severe licking when they were attacked by the battlewise Afrika Korps. However, having been transformed within a few days into seasoned veterans, they turned on the enemy, brought Rommel's legions to a surprised halt, assumed the offensive and chased his demoralized forces back into the desert.

Because of this rather widespread understanding of the Kasserine operation, another February headline, just five years later, has caused some lifting of eyebrows. This time they were not in such big print. They read "Rout of Rommel at Kasserine Pass Denied In Reports By Alexander—British Field Marshal Declares Germans Withdrew Methodically After Having Put U. S. Forces in a Grave Position."

The story, which appeared under a London dateline, went on to say that Marshal Alexander in his dispatches on the Tunisian campaign which had just been published had demolished the legend of the furious Allied counterattacks at Kasserine. It was reported that he had written that the decisive engagement in which the Germans had been halted in their attempt to turn the Allies' right flank had been fought by a British armored brigade group, a British infantry battalion and two field artillery battalions of the United States Ninth Division.

Marshal Alexander said that the battle ended when Rommel appreciated his "casualties were increasing at a disproportionate rate and that the opportunity for further exploitation had passed."

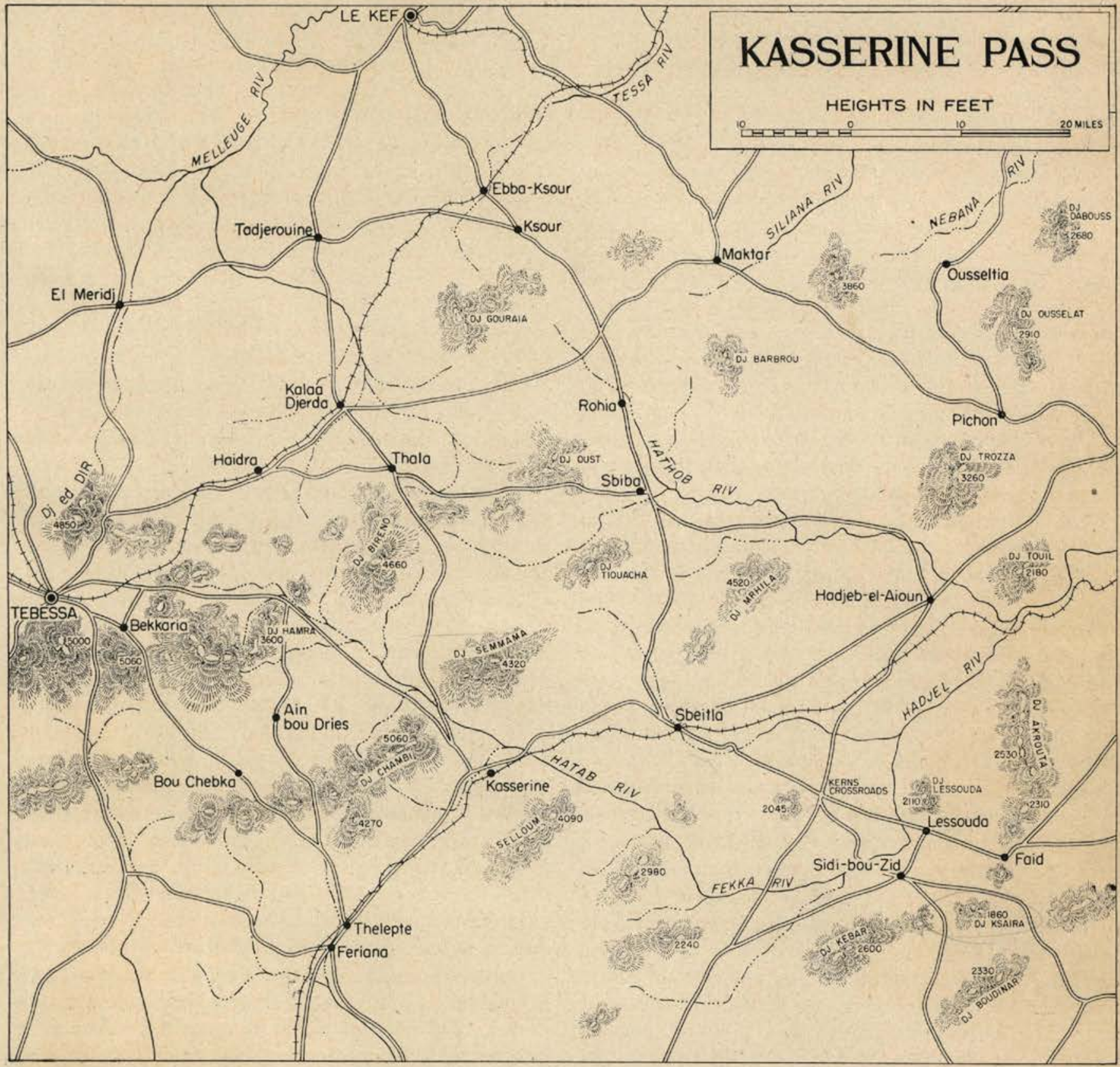
The writer took part in the fighting around Kasserine, which was publicized as an American victory. However, I have no intention of challenging the correctness of Field Marshal Alexander's conclusions. In the first place, it would be presumptuous since my position during that operation was that of a battalion commander. Secondly, there is no reason for me to try to get into an argument for the simple reason that, for the most part, I agree with him.

I have never felt that the credit for the success in halting the German offensive at Kasserine has been properly shared. The main force of that attack, once the Pass was captured, was launched in the direction of Thala, with the apparent plan of heading from there for Le Kef and thereby getting around behind elements of the British First Army. That attack was stopped by the British, assisted by a small American force. The attack in the direction of Tebessa, which an all American command defeated, was not the enemy's principal effort.

In my opinion, what really caused the Germans to pull back through the Pass, once they found their way blocked, was not the pressure we put on them but the realization that the Eighth Army was about to resume its drive and the holding of Kasserine was of no particular value to them. They had accomplished their mission by throwing us off balance in our attempt to drive through to the coast and had prolonged the eventual showdown in Tunisia by several months.

However, the fact that the Germans withdrew and were not driven back through the Pass in no way discredits the fight that we put up. American forces slowed Rommel's advance across the country leading to the Pass and stopped one prong of his offensive after he broke through. Our successes at that point were probably no more exaggerated in the news than were those of other American troops during the war when such accounts followed stories telling of their reverses.

What follows is largely a story of my experiences as a tank battalion commander in the fighting around Kasserine. Much of what I saw was observed from the limited view that one can get from the turret of a tank by Colonel Henry E. Gardiner


KASSERINE PASS
HEIGHTS IN FEET
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HATAB RIV
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Kasserine
KERNS CROSSROADS
DJ LESSOUDA
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2310
4270
SELLOUM
4090
2045
Lessouda
2980
Sidi-bou-Zid
Faid
FEKKA RIV
1860
DJ KSAIRA
Thelepte
Feriana
2240
DJ KEBAR
2600
2330
DJ BOUDINAR

when the enemy fire keeps you pretty well submerged. As a consequence, I cannot write authoritatively on the big picture of that operation. I do have some opinions though on the conduct of the command in higher levels and have included some comments and criticisms of certain actions. Whether these are justified or not may be open to question, but it's the way I felt knowing what I did then and nothing has developed in the few years that have passed since that time to change my mind.

The Battle of Kasserine was not one isolated action. It was really a series of engagements involving the fighting in front of the Pass, an action in the Pass proper and two battles between different sets of antagonists which occurred a number of miles out in the Valley above the Pass.

A little background information will perhaps be helpful in giving a better understanding of the events that led up to Kasserine. This should also put the reader in position to judge whether the troops that participated in that operation were green and inexperienced and give some idea of the equipment we had to fight with.

There was only one American armored division which took part in the Tunisian campaign and that was the 1st. Elements of the 1st Armored Division, under Combat Command "B," constituted part of the task force which captured Oran at the time of the Allied landings in Africa. The Division was organized then as it was throughout the African campaign on the old basis of a reconnaissance battalion, one infantry regiment, two armored regiments and three artillery battalions. While the casualties among the tankers were slight in the two days' operations against the French, one armored infantry battalion of the 6th Infantry took exceptionally severe punishment, suffering over three hundred and fifty casualties of which more than two hundred were killed.

The one medium tank battalion which participated in the initial landings at Oran was the Second Battalion of the 13th Armored Regiment. It was this battalion that I commanded throughout most of the Tunisian campaign. A medium battalion in the old setup consisted of a headquarters company and three tank companies of seventeen tanks each. That meant, counting the headquarters tanks, a maximum strength of fifty-four tanks to the battalion. The headquarters company had a platoon of 81mm mortars and a platoon of 75mm howitzers mounted on half-tracks that were termed assault guns. The reconnaissance platoon consisted of two half-tracks and a quartet of peeps.

The Second Battalion was equipped when it landed in Africa with the M-3, or as it was popularly known, the General Grant tank. While the M-4's or General Shermans were being supplied to the armored divisions at home, we never had a full complement of them until after the fighting in Africa had ended. The M-3 was a much inferior tank. It had a limited traverse on its 75mm gun, which meant that the tank could only fire in the direction in which it was headed. Moreover, the gun was set so low that almost the whole tank had to be exposed before it could be brought to bear on a target. There was no slope to the side armor and the .30 caliber gun in the cupola, which was for defense against aircraft, was worse than useless.

From Oran, the Second Battalion was rushed up into Tunisia. There we came under the command of the British First Army and joined its forces in the drive on Tunis. We were within eleven miles of our objective before the mounting German resistance brought us to a stop. A period of confused and bitter fighting followed during which we were joined by the rest of CCB. When the battalion was pulled out of the line on December 10, it only had twelve tanks left, the other forty-two having been lost in actions around Djedeida and Tebourba.

The High Command still had hopes of capturing Tunis before winter set in and we were hurriedly re-equipped and filled up with replacements. It was then that we received our first M-4's but only enough for about half of the battalion. As soon as we had a full complement of men and tanks, we were moved with CCB into a concealed bivouac, near a little community called Teboursouk. This placed us closer to Medjez El Bab which had now become our front line.

The day before Christmas I was directed to report to CCB's rear echelon, which was some thirty miles back down over a tortuous mountain road. It had been alternately raining and snowing for several days and the dirt road had been churned up by a heavy military traffic into a series of quagmires. On my arrival, I found that the unit commanders of CCB were assembling for a meeting, the nature of which was unknown. We hardly had gotten the mud out of our eyes when we were assembled in a cow shed which was the largest gathering place available. There Major General Lunsford E. Oliver, the CCB Commander, introduced us to General Eisenhower and General Anderson, the Commander of the British First Army. General Eisenhower spoke briefly. He said that the drive on Tunis, the plans for which had been unknown to us, had been called off. The reason was that the heavy rains, which were expected to continue, had made the movement of vehicles off the roads impossible. The rest of his remarks were to the effect that it was up to us unit commanders to see that our troops' morale was maintained at a high level during the period of their inaction. I can't say that the round trip over that road improved mine any.

On the night of 2 January 1943, I was called up to CCB and informed by the S-3, Lt. Col. E. A. Russell, that we were moving south to the vicinity of Tebessa. An American force was being assembled there for a rumored operation out into the desert country and the 1st Armored Division was to be brought together and would presumably function as a unit.

The battalion was in the first serial to move and we spent the night of January 5-6 on the road. Just at dawn, we passed through Thala and holed up for the day in the woods a few miles south of there, after covering just over a hundred miles. During the day, we got a big thrill from seeing a steady procession of C-47's with a nice white star and circle on their wings fly overhead. It seemed to be a regular shuttle service and, after more than a month of daily and sometimes almost hourly visits from the German air force, it was certainly comforting to see some American aircraft overhead.

Darkness found us on the road, still heading south. Several hours later we wound through a defile and some vehicles had difficulty in negotiating the stream at its bottom. This stretch of the road, which at the time held no significance for us, ran through Kasserine Pass.

German tanks were reported at various places in the nearby desert. On the night of January 9, we moved from our bivouac in the woods near Bou Chebka, along with the 13th's Reconnaissance Company and the 601st Tank Destroyer Battalion, to Sbeitla, which since the time of the Romans has been regarded as one of the key points of that section. En route we passed through the village of Kasserine, which is only a whistle stop on the narrow gauge railroad that runs between Feriana and Kairouan. Kasserine is about five miles south of the Pass, which came to bear the same name.

The terrain into which we had moved is much the same as that of the southwestern portion of the United States. If in the area between Las Vegas, Nevada, and Phoenix, Arizona, you were to substitute native huts and camels for tourist camps and trailers, replace the population with Arabs and substitute dirt roads for the surfaced variety, you would have a pretty good approximation of Southern Tunisia.

The country is so flat, with the exception of the rugged, hilly and mountainous masses which jut out from it, that it gives the impression of a sea in which there are a series of mountainous islands. The country is semiarid and low areas are sparsely covered with what might be likened to our scrub sage. The hills are rocky and have little more vegetation than the level country but some of the higher ground is covered by a fair stand of timber. The natives cultivate prickly pear cacti as camel feed. It grows to a height of around eight or ten feet and appears in large patches, usually in fairly well defined rows. Most such patches would provide fair cover for at least one tank or armored infantry battalion. We were surprised to find an occasional olive orchard of considerable extent but the trees were not as well grown out as those we had seen around Tebourba and Teboursouk.

What moisture falls in that area usually comes in a short period of time and, as a consequence, there is a heavy runoff and much eroding. The low ground is deeply cut across in some places, particularly adjacent to the hills and mountains. These washes or arroyos, as we know them in this country, are called oueds or wadis.

Tebessa is in somewhat higher country, closely hemmed in by the mountains and almost completely encircled by a range to the south that would deny access to vehicles except through the Kasserine Pass, the road running up from Feriana and Thelepte and the one through the Pass at El Ma el Aboid.

The main road through Kasserine Pass runs between Kasserine and Thala, which is some twenty-five miles to the north of the Pass and about thirty-five miles northeast of Tebessa. A road readily passable in dry weather, but very much of a secondary road, branches off from the Thala-Kasserine Road in the Pass and runs in a northwesterly direction to Tebessa, a distance of around forty miles.

When we came down into that area, the American II Corps had just taken over command and our Air Force was operating from fields in the vicinity of Thelepte and Feriana, which are on the level ground just beyond the mountains south of Tebessa. Gafsa, which was a straight shoot south of the airports, was held by a small Allied Force, while the French guarded the passes at Faid, Fondouk, Pichon and Ousseltia to the east and north.

Our stay at Sbeitla lasted ten days, during which the tanks didn't move out of the olive orchard where we had taken what cover we could the night we came in. The rest of CCB, consisting of the Second Battalion of the 6th Armored Infantry, the 27th Armored Field Artillery Battalion and service units, joined us in the same area. Our time was taken up with working on plans and in making reconnaissances for counterattacks against possible Axis penetrations in that general area, and for an attack which we were to launch through the Pass at Fondouk toward Kariouan.

During that period, experiments were made at camouflaging our vehicles by daubing them with wet clay the color of the surrounding country. The results were surprisingly good. The men seemed to welcome a change from the preinvasion requirements of keeping their vehicles clean and our OD paint job soon disappeared beneath a weird assortment of blotches and shadow effects which brought forth stories of individuals who couldn't locate their vehicles until someone opened a hatch.

Before our attack on Fondouk materialized, the Germans beat us to the punch by overrunning the French and a detachment of an American tank destroyer unit (equipped with the old half-track mounted 75's) to the north and broke into the Ousseltia Valley. CCB was rushed up there the night of January 19 and laid up in the woods near Maktar all day while reconnaissance elements worked out into the Valley. The following day the Second Battalion led off in an attack, which resulted in a series of sharp engagements lasting for three days. The enemy was driven back, losing a number of tanks and considerable equipment.

The battalion encountered its first German Mark VI's, which later became known as the Tiger Tank, in that operation, thereby confirming the local intelligence reports that such juggernauts were at large. The enemy used the few of those they had sparingly and the only piece of one that we were able to get hold of was a section of broken track. A few days later, the British, who were on our left flank, knocked two of them out and their rumored specifications, we were sorry to learn, had been more than confirmed.

The Battle of Kasserine was a series of engagements.

KASSERINE PASS

CCB was relieved on January 20 by the 1st Infantry Division. One of its regimental combat teams had participated with CCB in the drive to clear the Valley. On the night of January 28, we marched 133 miles back down to the woods near Bou Chebka, which move took us along the Sbeitla, Kasserine, Thelepte road again.

On arriving there, it appeared that big things were in the offing. While we weren't in on any of the planning above the battalion level, it didn't take a very astute S-2 to conclude that we were winding up for a drive out in the direction of Sfax, with the hopes of cutting off Rommel in his withdrawal up the coast before Montgomery. Troops were pouring out into the desert and much of the 34th Infantry and the 1st Armored Division, less CCB, were on the move, southward and eastward.

Having been told that we were in reserve, that we probably wouldn't move for a week, and to get busy on our maintenance, we lost no time in starting to pull engines and turn tracks. The battalion had been almost completely immobilized when we were alerted to move that night. By strenuous efforts, a good percentage of the outfit was ready to roll on schedule and the rest far enough along so they would be able to move the following night. On arrival in this area, we thought our troubles with the Luftwaffe were over but we soon learned differently. The enemy air continued to be most aggressive and all movements had to be made under cover of darkness. This wasn't to avoid observation but to prevent losses from bombing and strafing while on the march.

The night of February 1, we moved to Hadjeb el Aioun, a jump of just over ninety miles, which sent us back over our now familiar route of Thelepte-Kasserine. There we laid up in a cactus patch all day and the next night did some backtracking and then headed north to Maktar and then in the direction of Ousseltia. Some enemy dive bombers visited us just after daylight but did no more damage than shooting off the aerial on the command half-track. However, we took the hint and moved about a mile deeper into the woods.

There we remained for a period of two weeks. CCB was in the British First Army reserve, with the mission of being prepared to assist the French and the 1st Infantry Division if another attack into the Ousseltia Valley developed. Each company was authorized to immobilize one tank a day and the maintenance program which had been interrupted at Bou Chebka was resumed on a reduced scale. A heavy, wet snow fell during that period and lasted for a number of days, which made things pretty miserable, for we were not outfitted for such conditions and the use of fires had to be restricted because of enemy air activity.

It had become S.O.P. to have the Battalion Staff and each Company Commander, accompanied by one of his officers, crowd into the C.P. tent each evening to listen to the BBC newscast, followed immediately by the daily official German war communique which was beamed for African listeners, and then to go over whatever matters we had to take up. We hounded our Combat Command Headquarters during the day for information about what was going on with II Corps and were usually able to augment that by some sleuthing of our own.

The news was not good and it steadily grew worse. A successful American attack at Sened Station as a preliminary on a move to Maknassay had been discontinued and the troops withdrawn on the orders of our High Command. The Germans had attacked through Faid Pass and taken most of the French defenders prisoners. An American attempt to recapture the Pass failed and we took a severe beating. With the Germans now in position to cut off our forces at Gafsa, they were withdrawn to the vicinity of Feriana.

Within a matter of about a week, the entire situation had been reversed and, instead of the Americans being on the offensive and threatening Rommel's communications, the enemy was attacking, we were taking severe punishment and falling back. No one could say for sure where we were going to stop.

The stories kept coming in of how II Corps from its headquarters, which had been dug into the side of a mountain by Army engineers in a canyon near Tebessa over a hundred miles to the rear, was trying to direct combat operations down to the company level. It appeared to be always a case of the old story "too little and too late." II Corps seemed to consider it necessary to try and plug every gap between those widely scattered mountains in the desert and, in attempting to accomplish this, spread the troops so thinly that the enemy never had any difficulty in achieving numerical superiority at any point that he elected to attack. As a consequence, each small group as it was hit was either overrun or forced to withdraw. Developments continued to prove that there was no place in the command where greenness and inexperience were more in evidence than in II Corps headquarters.

It was obvious that it was just a question of time before the elements of CCB would be committed in this effort to stop the enemy and our only hope was that we wouldn't be thrown in piecemeal, as most of the other units of the 1st Armored Division had been.

We were alerted to move on February 9. This was called off the next day, only to be followed by another alert. This alerting and dealerting became a daily routine, until we finally got an order just a little before midnight on February 15 to move at once to Sbeitla.

Our movement order was an urgent one and it was going to be a tight squeeze to make the I.P. on time. As we pulled out of the woods and on to the road, we encountered delay. The French were quitting the Ousseltia Valley and there was a column of their colonial troops on either side of the road, with their pack horses, moving in the same direction we were. The column already extended for several miles ahead of us and, since they weren't able to clear the road because of the precipitous sides in several places, our rate of march was slowed to theirs until we came to a point where our routes divided. From there on, we had clear sailing and we were waved off the road into an assembly area north of Sbeitla well before daylight.

I went on to where I understood CCB was to be located, but couldn't find them. Having seen the C.P. sign of the 1st Armored Division along the road, just northwest of Sbeitla, set up in a big cactus patch, I returned there, where the Assistant G-3 gave me CCB's coordinates. I received a brief report on the situation, which not only verified all of the bad news that we had heard but added a great deal more. During the previous two days in the fighting around Djebel Lessouda and Sidi Bou Zid, the Division suffered the staggering loss of two battalions of tanks, most of an armored artillery battalion, two reconnaissance companies, all of an attached 155mm field artillery battalion and one and a half battalions of attached infantry.

Daylight was breaking on the morning of February 16 when I left Division and I soon located CCB but there were no instructions. The battalion had been assigned an open flat area and an enemy reconnaissance plane could count every one of our vehicles.

Early in the afternoon I was summoned to CCB, along with the other unit commanders, and Brigadier General P. M. Robinett, the Combat Commander, gave us our orders. II Corps was withdrawing from this area and the 1st Armored Division was charged with occupying a defensive position covering Sbeitla. CCB had, in turn, been assigned the mission of defending the sector to the south of Sbeitla and was to be prepared to counterattack.

The Second Battalion was directed to take up a position at once to the south of Sbeitla and to prevent any enemy movement between the town and a mountainous mass that lay seven miles to the south. During our previous stay in the olive orchard, east of Sbeitla, we had thoroughly familiarized ourselves with this section. The battalion closed in our assigned sector within an hour after we were told to move. This was done in daylight and, as we passed through Sbeitla, the men manning the 90mm ack-ack guns that were defending the dumps in that area, looked very much relieved to see some friendly armor going in the right direction. They had been ordered to be prepared to use their guns in an antitank role which would have meant some interesting shooting for they were not equipped with sights for direct firing and, we were told, had no AP ammunition.

Platoons of the reconnaissance company established themselves well out to our front, a tank destroyer unit, armed with the half-track 75's, went into positions to the east of us and our infantry battalion occupied a pass on the hill mass to our right flank. Reconnaissance was made by the three tank company commanders of the battalion and their officers for positions to be occupied just before daylight.

Several things stand out in my mind from the events of the night of February 16-17. A high-pitched staccato voice kept cutting in on our command net, jabbering away in German. A bunch of replacements were dumped on us and the trucks that brought them up left before we could refuse them so we had to fit them in wherever there was a vacancy in a crew. A detail of weary tankers was ordered to assist the engineers in laying mines. About the time they were to go to work, German tanks made a sortie down the road, firing as they moved. Just in case there was any possible doubt in the enemy's mind as to how hard pressed we were, how hopeless our higher command regarded the situation, and how little confidence it reposed in our ability to perform our assigned mission, the ammunition dumps were blown up in Sbeitla, with a wonderful show of pyrotechnics. The display was completely unappreciated so far as we were concerned.

Shortly before dawn, our liaison officer came to take me back to see the Combat Commander. He was in a half-track in a wadi, a few miles to our rear. The Division service elements had moved out during the night, other units were in the process of leaving and our mission remained unchanged except that the order now was to hold Sbeitla until 1100 hours. I was told to be ready to counterattack, if such a move were ordered. The battalion was all in position on my return. I had a conference with the Company C.O.s and a scheme of withdrawal was agreed upon. Our reconnaissance had disclosed that there would be no difficulty in pulling out without going back through Sbeitla.

It then became a case of just waiting and the morning dragged on without anything happening. We could see a few of what we understood to be our third battalion's tanks in position off to the side of the Hadjeb el Aioun road, north of Sbeitla, but they gradually pulled west of Sbeitla.

The enemy's watches must have been pretty well synchronized with our own for just at noon I counted

Sidi-Bou-Zid where the First Armored Division suffered staggering losses.

SIDI BOU ZID

thirty-five enemy tanks come rolling over a rise in the ground almost to our direct front, a distance of about three miles away. There were others but I didn't have time to count them.

The tank destroyer battalion soon found things too hot for them and they came streaming back. As the enemy fire began to land around us, I ordered the battalion mortar and assault gun platoons, which had been immediately behind the tanks, to take up a position further to the rear. The field artillery battalion that was also in our general area was ordered to displace and took off for a new position.

Our boys, with the exception of one platoon of the right company which, of necessity, was sitting out in the open, were in excellent positions to meet the attack without disclosing their positions until they fired. There was a series of small wadis running at right angles to the direction of the enemy's approach and our tanks were so favorably located and their camouflage so effective that they were difficult to detect until you were right on them.

We held our fire until sure it would be effective and then let the tanks that were in view have it in what amounted to almost a volley. It stopped the attack cold and the enemy was obviously very much surprised to find that they had run into some organized resistance.

The artillery battalion assigned to support us and which had left an F.O. with me, did not give us a round of fire while we were in our initial position. I never determined whether it was because of a breakdown in communications, whether they were too busy firing missions for someone else or if it was because they didn't have a battery in position to reach the targets on which we requested fire.

However, there wasn't too much reason to complain on that score for we weren't receiving any artillery fire ourselves. It was a tank battle. We had the advantage of being on the defensive and well defiladed from the front. However, this advantage began to diminish rapidly as the enemy, which was in great strength, began to locate our tanks and work up to them. Losses started to occur and the center company which was somewhat out in front was forced to pull back slightly in order to keep from being cut off.

As things became increasingly warmer, I advised CCB that we would soon be in serious trouble if we were not allowed to displace. Word came back that we would have to hold until the infantry battalion on the hill mass to our right was withdrawn. Fortunately, we were informed soon after that a route had been found to take the infantry out which would permit us to commence our withdrawal as we saw fit.

I had just given the word to execute our previously agreed upon plan, when I received orders to send a platoon into Sbeitla since it had been evacuated by the rest of the Division. A platoon from our left company, which was still equipped with the old M-3's, was dispatched on that mission. The Company Commander was instructed to withdraw that platoon from Sbeitla when his company displaced. This was done, the platoon leaving by the main road, west of the town, without loss.

Our plan of withdrawal was simply one of leapfrogging to the rear, with one company displacing, while the other two stepped up their rate of fire to cover its movements. When the right company was well on its way to a previously designated position, astride a large wadi which ran generally in the direction of the enemy advance, I started back and ordered the second company to commence to move.

As the command tank entered this main wadi, I spotted a German tank already in it, having just rounded a bend about three hundred yards below me. It was only partially visible and I didn't wait to see what the effect of my gunner's first shot was but continued on across the wadi. However, we had hardly cleared the spot where we fired when a shell broke the right track on my tank and we were immediately hit again and this time the tank burst into flames, the driver was killed and the assistant driver wounded.

Although under machine-gun fire the moment we hit the ground, the tank gave us enough cover to crawl to a point where another bend in the wadi permitted us to stand erect. A small group of us from knocked out tanks continued on up the wadi but two enemy tanks caught up to us, opened up with machine guns and forced us to scatter into adjoining wadis tributary to the one we were in. I was much relieved at that point to catch a glimpse of the last company of the battalion displacing from its original position retiring in good order on the other side of the main wadi from me.

My experiences for the next few hours were far from dull and something of a story in themselves. I lay behind one of the smallest of the smallest species of brush found in Tunisia for better than an hour, alternately cussing our artillery, which had opened up fire on these tanks, wondering if I was going to be a casualty of our own fire, crushed by the next German tank that came along or just finished off with a spray of small-arms fire or a hand grenade tossed in my direction. As dusk settled in and a skirmish line of enemy infantry appeared in the distance coming my way, I decided it was high time to take off and made a run for it into the broken country on the side of the wadi opposite to where I had been lying.

The enemy for awhile very obligingly kept shooting up flares, apparently to mark their advance, so I had some guidance in giving them a wide berth. All night I headed in the direction of Kasserine, with my admiration and respect for the infantry mounting as I plodded along. Things soon quieted down and it wasn't long before the only noise was the incessant barking of every Arab dog in the countryside.

Our frequent trips along the Kasserine-Sbeitla road had familiarized me with a wadi about two miles east of Kasserine that had required continual engineering work to make it passable. It was the drainage through which the water came out of Kasserine Pass. That seemed to me to be a logical spot for our troops to have established a roadblock so I waited near it until daylight for fear of being fired upon by friendly troops. When it became light enough so I could be recognized, I eased up to the point to find that it was undefended, although some effort had been made to render it impassable through demolition.

I began to feel very uncomfortable for I would have had little chance to escape detection if some sharp-eyed enemy reconnaissance unit appeared on the scene. At that point, I began to wonder if I might not still be behind the enemy and that they possibly already held Kasserine.

Accordingly, I started along the top of the wadi with the plan of leaving it a couple of miles before it entered the Pass, heading directly up the shoulder of the mountain that ran out from the Pass. While skirting the wadi, I joined up with two French colonial soldiers who had escaped from Sidi bou Zid. It was through their intercession that an Arab family took us into their tent and fed us. We had a few bad minutes when a little Arab boy came rushing in, excitedly shouting "Allemands! Allemands!" and gesticulating in the direction from which we had just come. Investigation disclosed no one but we didn't tarry long and our host seemed glad to be rid of us.

As we neared the road, I noticed a peep come cautiously out of the Pass and proceed slowly towards us. Not being certain as to its identity, we took cover. It continued to move along slowly and, when it became apparent that the occupants were Americans, we disclosed ourselves. It was a reconnaissance peep that was looking for survivors of the tank destroyer battalion that had been with us a short time the day before. They decided to take my word for it that about all they could expect to find for sure were the enemy and offered to take us back into the Pass.

As we started through, I observed a few men and a couple of 37mm's set up covering the road. I was told that the engineers were organizing a defense of the Pass. We soon located a maintenance outfit of the 1st Armored Division which was repairing some of our tanks and a few hours later I was with my outfit. They had come through the Pass during the dark, halted briefly, and had then been ordered to El Ma el Aboid, to the south of Tebessa, where it was expected another enemy attack would develop.

I found that the battalion had lost ten tanks during the withdrawal. The next day there was much activity trying to match up our extra men with battle-worn M-4 tanks drawn from the surviving units of the 1st Armored Regiment, and in reorganizing. I went over to CCB to report and paid a visit to one of our companies which had taken up defensive position on the road leading out into the low country.

I got back to the battalion area early in the afternoon, just in time to receive word that we were to move at once to Thala. Just as we were well strung out on the road, an enemy reconnaissance plane came in and looked us over so I had visions of our position being re-plotted shortly afterwards on the enemy's G-2 maps.

We were a pretty glum lot. So far as we knew, ours was the only medium tank battalion left in the Division that was in shape to fight, and, while we had no other word than to move, we knew it meant trouble. We realized we had been fortunate to come off as lightly as we had in our last engagement and we were not sure that our luck was going to continue to hold. Our spirits weren't improved any when a cold rain commenced to fall.

En route we received word by radio of a change of destination and that we would pick up a guide at Haidra, which was on our line of march to Thala. My reconnaissance officer, who met us there, said to turn the column south and keep them headed down the road while I was to go to General Robinett and get my orders.

I found the CCB Commander and his Exec., Lt. Col. B. S. Cairns, in a C.P. tent, a short distance off the road. From them I learned that the Germans had broken through the Pass and were reported to be in Thala, which was or had been held by the British. The General said that General Fredendall, the II Corps Commander, had given him all of the American troops that were immediately available and ordered him to restore the situation at Kasserine Pass. These troops were scattered, some units were badly disorganized and he still had to establish contact with most of them. The General had been unable, as yet, to get through to the British on his left and didn't know where the other American forces were on his right. It was his opinion that the Germans were not so much interested in taking Tebessa as they were in capturing the airports from which our bombers were operating at Youks les Bains, which was ten miles to the west of Tebessa.

The mission of the Second Battalion was to secure a road junction on the Tebessa-Kasserine Road and, at daylight, to move forward to contact and then push forward. However, I was warned to proceed with caution and not to permit the battalion to get knocked out for it was the only tank force which was immediately available to deny the enemy its drive on Tebessa.

This session did not last long and the battalion was still passing when I reached the road. A guide, who had been sent ahead, was stopping the tanks at the designated junction when I came up and the battalion was already forming a sort of a covered wagon circle formation, with the half-tracks and peeps in the center, which it was our custom to adopt under such circumstances of relative isolation. It had been dark before our advance party reached the spot, and, since we only had a 1 over 200,000 map of the area, we knew very little about what kind of country we were in.

One man was kept on guard in the turret of every other tank and a detail was stationed on the road to check the stragglers that were coming back from Kasserine. They were exhausted and disorganized infantrymen and engineers from the small force that had been left to guard the Pass and they reported things as being in a bad way. The fight was still in progress, with frequent gun flashes in the direction of the Pass twenty miles away, and you could see the red glow of fires. No news was received during the night except that our artillery battalion had gone into position some place to our rear.

With light of the next morning, February 21, we found we were right out in the flat. The open country extended to our front in the direction of the Pass and for miles to our left. We were close to the lower hills of a range of mountains on our right, which ran down to and formed the west shoulder of the Pass. A series of hills were to our rear. CCB had established its headquarters back of one of them.

Just as we were becoming aware of our extremely exposed position, some friendly tanks appeared, coming from the direction of the Pass. They were the survivors of a company of the Regiment's third battalion, which had been with the force assigned to defend the Pass. It was the flashes from their guns that we had observed during the night. They were followed almost immediately by elements of our reconnaissance company which had preceded us on the move the day before. Two platoons during the night had gone to within three miles of the Pass where they had gotten involved in some crossfire before pulling back. The tank company commander, Lt. George R. Dempsey (later Captain, killed in fighting north of Rome), whose outfit was badly shot up, told us there were no friendly troops that he knew of between us and the Pass and that he had crossed several large wadis running at right angles to the road which came down from the hills on our right.

No time was lost in moving forward and the tanks took up positions in a wadi which was just about perfect for depth, while our assault guns and mortars set up in a cactus patch to our right on the edge of the hills. We were joined there by our F.O. of a few days before, who, at that time, had been madder than we were that he couldn't get any missions fired. Everything was fine this time and he proceeded promptly to register in.

I was just on the point of sending out some battalion reconnaissance to locate the position of the next wadi when a column of trucks appeared to our front, halted a few miles distant, and men began to unload, while some other vehicles, presumably tanks, continued in our direction. They were within range of the artillery which opened fire, causing the trucks to withdraw and the personnel to scatter. This drew the attention of twelve Stukas, which came over and, after circling their target, dived down on the guns without, happily, knocking out any of them. The battalion took the tanks under fire when they came within range and, while they replied, they didn't press their attack and sought cover in some intervening broken ground.

Reports came in to us of enemy infiltration along the ridges to our right and that our infantry had been sent forward to stop them. With no other instructions than to continue our mission, we pulled back a couple of miles that night to resupply. Once again, we had to provide our own security. We had a company of the 894th Tank Destroyer Battalion, who were new to us, attached during the night, along with some of their reconnaissance.

As it began to grow light enough to see, we started forward to our wadi of the day before but, on approaching it, found that it had another tenant who was in no mood to share it. However, the conditions were not completely reversed from the day before since we soon discovered that the enemy's antitank guns were not knocking out any of our tanks. Furthermore, we seemed to be gradually silencing some of their fire. Our mortar platoon laid down a smoke screen enabling one company to edge into a wadi from which a platoon was able to work around to the head of the one from which most of the enemy fire was coming.

We learned that the enemy infantry on our right had succeeded in capturing a battery of 105's belonging to the 1st Infantry Division that had been in a forward position. They were just on the point of getting them turned around in our direction when a battalion of the 16th Infantry (1st Infantry Division) and what was left of a company of tanks from our third battalion recaptured them.

Late in the afternoon a surprising number of enemy wheeled vehicles suddenly broke cover from our right front and started streaking to the rear. We didn't get all of them but our batting average was pretty good. I have often wondered if that wasn't planned in the hopes of drawing us in pursuit and into some sort of a trap.

As the light began to fail, the tank company commander, Capt. George A. Johnson (later Major and Battalion Exec., killed at Anzio), whose platoon had worked forward, reported he had a batch of prisoners. I moved over to his position and climbed out of my tank in time to see one of the most exhilarating sights, so far as I was concerned, up to that point in the campaign. A column of prisoners came marching around a bend in the wadi, with their hands held high, led by one of our tankers with a tommy gun in his hands. In the dusk, it looked like there were a thousand of them but the actual count showed just under three hundred. They were a mixture of Germans, in Afrika Korps uniforms, and Italian Bersagliere, who were wearing their traditional plume of feathers in their pith helmets.

When we pulled back to resupply that night, an armored infantry company, which had been made available to us, took up positions to ensure that we wouldn't have to worry about the lease on our wadi. All that night the 68th Armored Field Artillery Battalion, which had joined CCB's force, pumped shells in the direction of the Pass and a series of bomb runs were made on it by our Air Force.

Daylight the next morning found us scavenging the equipment and supplies that the enemy had abandoned. One of the most acceptable finds was a truckload of American Air Corps' rations, which had been picked up from the dumps hastily abandoned at Feriana. We hadn't been getting anything but cold "C" rations for a long time and it was nice to share some of the Air Corps' more diversified menus.

Everyone was trying to get a souvenir from a wide selection of towed antitank guns, trucks, Volkswagons, down to motorcycles and a variety of small arms. It took a little prodding to get a reconnaissance platoon, which had been directed by CCB to move out ahead of us, away from this stuff. They started on a swing to our left flank which had been wide open since we started this attack, and I sent a platoon of tanks on a wide sweep to our front.

Nothing was turned up and we moved forward a distance of eight miles. The artillery closed in behind us and the Tank Destroyer outfit worked along the shoulder of the mountains to our right.

At daylight the battalion moved forward another three miles without opposition to a point where it was just a level stretch to the entrance to the Pass. In this move, we passed a number of knocked out vehicles which our artillery or Air Corps must have accounted for. We had received word that there was to be an attack on the Pass the following morning and, since the forces working up through the hills on our right had not been able to keep up with us and the situation on our left in the British sector, while clear almost as far as you could see, was still unknown, it was decided to hold there until the next day. The enemy also concluded we had proceeded far enough and opened fire on us with a bombardment shelling from a battery of 210mm guns.

When our liaison officer brought up the orders for the next day's attack, I held a meeting of the company commanders and staff to consider our part in it. As we discussed the projected attack, which was to be in the nature of a screening operation for a combat team of the 1st Infantry Division, these 210mm ash cans kept whining in and erupting in our general vicinity. Colonel C. C. Benson, the Regimental C. O. who was present, offered the opinion that the enemy was withdrawing and that this shelling was just a farewell salute and offered to bet that there wouldn't be a shot fired at us the next day, which wager I promptly covered.

Daylight of the 25th found us enshrouded in a dense fog, which was something new to us in that area. The infantry had come up as scheduled and we were forced to move out blindly in order to stay ahead of them. I dismounted and went ahead of the tank several times to check our direction with a compass. As the fog began to dissipate, we were relieved to find that we were headed in the right direction and surprised to discover that Colonel Benson, who was apparently anxious to collect his bet, preceded us on foot.

The battalion was moving with two companies abreast and one in reserve. The further we went the more I became convinced that any minute the enemy would open fire. The infantry, which had been following us, began to veer off to the right and start into the hills while we proceeded on down the narrowing valley.

We reached the end of the valley without encountering any resistance and I realized I'd lost a bet but one that I'd never be more glad to pay. The road at that point goes through a defile which could not be bypassed and which we found to be heavily mined. A reconnaissance platoon that had been moving forward on our right started working down the road, pulling mines as they went. There was still nothing to be seen on the main road through the Pass, which was now just across a wide and very deep wadi from us, so I put one company in position to cover it and worked another as far forward as it could go on either side of our road.

The movement forward had, of course, been reported to higher headquarters and I was just enjoying the relief of having my shoes off for the first time in six days when up rolled Major General Ward, our Division Commander, and Brigadier General Roosevelt of the 1st Infantry Division in their peeps to inquire as to the situation. On being informed as to the status of things, General Ward asked to use my tank radio to send a message but it was not working too well so I took him over to one of the company commander's tanks. Several months ago I had a letter from a boy who asked me if I recalled the time when General Ward came up to his tank at Kasserine and sent back a message reading "The Pass Is Ours."

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ARMY DAY — April 6th

CARDE

AMPHIBIOUS OPERATIONS

by Brigadier General D. A. D. Ogden

This article covers in detail the technical aspects of amphibious warfare: history, experience, organization, technique, employment, coordination, logistics: the many factors necessary to the mounting of an amphibious operation. There is appraisal of the differences in method and accomplishment among the Services, one of the problems confronting our unified command. This complete appreciation assembles valuable information in one source.

FOREWORD

IN August, 1942, the nation found itself in a rather unusual situation. A concentric drive of dictator-governed nations had driven us and our allies from every continent in the world except North and South America, saving only the precarious footholds on the islands of Great Britain on the coast of Europe, a very precarious foothold in North Africa, and the continent of Australia, where the Australians were preparing to give up the northern half of it without a fight because they had no means of making one. Submarine warfare was exacting a heavy toll of our communications with these precarious beachheads in the remainder of the world. The Axis General Staff reasoned logically that this was the end of America. This was sound reasoning if history is any basis for drawing a conclusion. No nation had ever before carried out a successful invasion of another country over a great water distance when that nation was a strong military power and determined to resist. Furthermore, air power and modern communications made invasion even more difficult than it had been in the past.

The pages of history are strewn with the wreckage of empires which collapsed as a result of an unsuccessful attempt at invasion. The British Empire was almost wrecked on the shores of Gallipoli. Napoleon's empire never recovered from the failure of his attempts to invade England. The Spanish Empire failed with the wrecking of the great armada, another attempt to invade England. There can be cited many other examples.

We, as a nation, were faced with the choice of accepting the isolation which many of our statesmen said they had always wanted, or we had to carry out successfully a military maneuver which had never been successfully executed before. We lacked the Navy, we lacked the technical knowledge, we lacked the equipment, we lacked trained men. The only things we didn't lack were guts and determination. In this atmosphere the Engineer Amphibian Command was formed at Camp Edwards in May 1942 and started training, organizing and equipping what were then known as "Amphibian Brigades"—specialists in military invasion.

ORGANIZATION OF AN AMPHIBIOUS FORCE

Amphibious operations are joint operations. They must include all the power that the Army, the Navy and the air forces can get into them. There is no such thing as a partial victory or a drawn battle. These are risk-all, then win-all, or lose-all operations. One single major failure might mean the end of America as a nation. Teamwork between the three arms of the services is essential. From the Army's point of view an amphibious operation is one in which mingled land and water areas are involved and water is used as a medium of transportation.

Look at this question from another angle; that is, from the angle of Army organization and how it may best be employed in amphibious operations. Only the best employment will be the winning employment. Our unit of combat composed of combined arms and services is the combat division. Behind these are a very large proportion of supporting troops consisting of special combat units, reserves and services. The number of supporting troops depends upon the length of the line of communications, the mission and situation. In this war, it was necessary for us to fight with the longest line of communications that any nation in history has ever sustained—communications encircling the world. Therefore, the percentage of supporting troops in our Army was large. How large it was is well illustrated by this: The strength of the United States Ground and Service Forces exceeded 5,000,000 men. They were able to place in the field 89 combat divisions of approximately 14,000 men each. Of these 89 combat divisions, 87 saw employment in combat. 89 combat divisions, with a strength exceeding 14,000 men each, will account for approximately 1,300,000 men. Of course, in the Army there must be men in training and men in transit, which will account for another 1,300,000. The remainder were all in organized troop units which we may classify as supporting troops. In other words, for every soldier in a combat unit there were three soldiers supporting him.

So much for the larger picture of the Army as a whole. Let us analyze in a similar fashion the strength of a corps. A corps normally contains three divisions. Usually its over-all strength will approach 80,000 men. Three divisions will account for 42,000 men; therefore, 38,000 or almost 50 per cent of its strength is in the supporting troops. Divisions are cohesive units. They are well trained and well organized. They generally take care of themselves in the field. All the higher staff needs to issue to a division is general directives. The division will carry them out. But the other 38,000 men in a corps are not well organized. They consist of individual battalions, regiments and companies thrown together into some sort of haphazard framework. Much of the work of the staff of a corps is necessarily concentrated on the effective employment of these supporting troops. A corps commander will usually find that his divisions are quite well trained and he cannot improve their effectiveness very much by the personal efforts of himself and his staff. The supporting troops of the corps, on the other hand, may need considerable effort on the part of the corps commander and his staff, to make them effective. Therefore, the success of a corps is largely determined by the extent to which it can effectively employ its supporting troops.

As the size of the unit increases, the percentage of supporting troops also increases, so let us look next at an Army. An Army normally consists of three corps of three divisions each, plus three divisions in reserve, or twelve divisions. This would probably total 400,000 men, of which only 168,000 men are in the divisions and 232,000 are in supporting troops, or almost 1½ men in support for one in the combat units. There is no use giving a higher commander all of this manpower to support his combat units unless he employs it to make the fighting soldier more effective in battle. The higher the echelon of staff, the more its attention must be devoted to the employment of supporting troops. Invasions have failed because the troops which supported the combat forces were not effectively organized or effectively employed.

Gallipoli A Failure

Let us consider Gallipoli, a classic example of a failure of invasion. It almost caused the collapse of the British Empire. First, the naval battle was successful. The British Navy commanded the seas. There was no air power at that time, so air power was not a factor, but in these days the air force must command the air before invasion can commence. Then what happened?

1. The troops could not get from ship to shore rapidly.
2. There were no adequate craft or adequate means of getting them in.
3. Units landed in the wrong places because of poor intelligence.
4. Tactical units were broken up.
5. Ships were loaded wrong so combat equipment was not available, where and when needed.
6. The signal net was inadequate.
7. The supply services were inadequate so troops went without food, clothing, ammunition and water.
8. The engineers were inadequate so land communications were inadequate.
9. Medical services were inadequate, with the result that troops were weakened by epidemics and wounded men died for lack of care.

The combat soldier had to make up for all of these handicaps with an extra quantity of courage and fortitude. Since he is expected to put all he has into any action, where will this extra courage and fortitude come from? It is a most fatal handicap to impose.

Two Types of Amphibious Techniques

So, in 1942, with many potential Gallipolis ahead of us, it was decided to create an organization in which these things would not happen, and invasion would be successful. These organizations were the Engineer Special Brigades. They were composed of units of supporting troops required to provide mobility and logistic support to a unit in combat on a hostile shore. Our program was successful. The Army executed forty-nine successful combat operations in the Mediterranean, Atlantic and Southwest Pacific, in all but three of which the brigade technique was employed.

The Navy and Marines also had developed a technique adapted to their particular organization. Using that technique, and reinforced by a few Army divisions, the Navy and Marines executed successful invasions in eighteen different locations.

Here is a compilation of the Navy-Army and Navy-Marine amphibious assaults in World War II:

NAVY-ARMY

1. North Africa
2. Sicily
3. Salerno
4. Anzio
5. Southern France
6. Normandy
7. Nassau Bay
8. Kiriwina Island
9. Woodlark Island
10. Salamaua (Tambu Bay)
11. Attu
12. Kiska
13. Lae
14. Finschhafen
15. Arawe
16. Cape Gloucester
17. Saidor
18. Talassea
19. Manus Island
20. Hollandia
21. Tanemerah Bay
22. Aitape
23. Wakde–Toem–Maffin Bay
24. Biak
25. Noemfoor
26. Sansapor
27. Morotai
28. Leyte
29. Ormoc
30. Mindoro
31. Lingayen
32. San Marcelino
33. Subic Bay
34. Bataan
35. Corregidor
36. Nasugbu and Southern Luzon
37. Zamboanga
38. Parang
39. Macajalar Bay
40. Tawi-Tawi
41. Tarakan
42. Brunei Bay
43. Negros
44. Panay
45. Cebu
46. Palawan
47. Balikpapan
48. Okinawa
49. Japan occupation

NAVY-MARINE

1. Funafuti
2. Tarawa
3. Makin
4. Kwajalein
5. Eniwetok
6. Ulithi
7. Palau
8. Saipan
9. Guam
10. Tinian
11. Iwo Jima
12. Guadalcanal
13. Russell Islands
14. New Georgia
15. Vela Lavella
16. Bougainville
17. Green Island
18. Mussau Island

Both amphibious techniques are founded on the basic idea developed by the Navy and Marines in the years preceding the second World War. The differences arise solely from the difference between organizations of the two forces. The doctrine and technique taught by the Navy is not wrong. It is, however, wrong for a particular type of organization such as the United States Army,

COMPARISON OF LOGISTIC ORGANIZATIONS

	Marine	*Army*
Ports of Embarkation	Navy	Army
Transport Service	Navy	Army
Stevedore Service	*Navy Special SeaBees	Port Battalions, T.C.
Lighterage	*LCT, LCM, Rhino, Navy	LCT, LCM, DUKW, 1/3 Navy, 2/3 Army
Beach or Wharf Labor Cranes	*Navy Logistic Support Companies	QM Service Cos. or Misc. Army Labor
Shore Signal Net	None	Army Shore Battalion
Construction of Roads, Dumps, etc.	*Navy SeaBees	Army Shore Battalion
Trucking Beach to Dump	Marine Combat Div. Trucks or Marine Service Regt.	Engr. Spec. Brig. Truck DUKW Cos., T.C. Truck Cos.
Dump Labor	First, Marine Combat Div., then Marine Serv. Regt.	Depot Cos. for various Classes of Supplies
Port Operation	Navy Port Director	T.C. Port Commander

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*These units comprise a "Cub."

where it does not fit or apply to the organization of the Army. Therefore, it is necessary to start out by understanding the difference between the organization of the United States Army and the United States Marine Corps when working with the Navy.

The Marines are a part of the Navy and are supported by naval services. The similarity between the Marines and the army organization stops at division level. The 50 per cent or better of supporting troops found in the army higher units have no parallel in a Marine force. A Marine Corps will consist of its three combat divisions and a very limited number of nondivisional troops wholly unlike any in the Army, or a total of 55,000 to 60,000 men. In developing its technique, the Marines build from their services in the Navy. The Army uses its own services.

The composition of the Engineer Special Brigade is as follows:

Engineer Special Brigade
O–423 WO–19 EM–8199
Brigade Hq
O–28 WO–1
Brigade Med Det
O–2 EM–10
Medical Bn
O–30 WO–1 EM–384
Quartermaster Hq & Hq Co
O–8 EM–206
3 Engineer Boat & Shore Regiments
Each–O–101 WO–2 EM–2122
Brigade Hq Co
O–2 EM–104
Engineer Boat Maint Bn
O–39 WO–9 EM–913
Ordnance Maint Co
O–5 WO–1 EM–99
Signal Co
O–6 WO–1 EM–117

Employment of An Engineer Special Brigade

The mission of the Engineer Special Brigade as dictated by the War Department is, in part, as follows:

"1. . . . the . . . Engineer Special Brigade . . . will be trained and equipped for:

> "a. Supporting combat landings of a reinforced division . . . and the lesser included mission of supporting a landing under administrative conditions. This requires the inclusion and training of services necessary for full logistical support. The mission requires also the operation of boat elements over long distances at sea, their training for combat, and the maintenance of these units, for protracted periods under field conditions.
>
> "b. Rapid expansion to a strength adequate to support the landing of a separate corps under combat or administrative conditions.
>
> "c. When stationed within the United States, assisting in the development of amphibious tactics and equipment, and the training of National Guard and Organized Reserve units and personnel."

It is important to understand what these words mean. "Full logistical support" means that the brigade will be specialists in directing the employment of all supporting troops behind the combat units, in the special situations which arise in amphibious operations. Boat elements are included in the brigade because, after having successfully landed, the amphibious phase of warfare does not cease. In the conduct of land warfare, after a ship-to-shore maneuver, the combat commander must have amphibious support. The Navy's sole responsibility is to put him successfully and safely ashore.

In the recent war, most of the continents which we had to invade were not the civilized continents of the world. A mechanized Army has in it about one vehicle for every seven men. The vehicles were the equipment which created the difference between the American soldier with his mechanical power and the foreign soldier with a rifle on his back. Don't underrate the foreign soldier in a rifleman's warfare and let us not fight him on his terms. We have to make the kind of warfare in which we will win, so there must be means of moving all this equipment in countries where there are no roads. That mobility is provided by your boat elements and they have to do things which have not been done before and go places which have never been entered before. They have to have both daring and proficiency.

Shore-to-shore operations are an Engineer Special Brigade specialty. There is no such thing as division of amphibious force into Army, Navy and Air Force. Each carries a share of responsibility and that share is as large as it is able to carry. It is the Navy's responsibility to win the naval victory which will insure command of the sea, to load and transport the army forces, to deliver them safely upon the enemy shore. The Army commander then takes the responsibility for the conduct of the land war. Fire effect on the beach to be invaded is very potent. A wise enemy will not stay and be obliterated. We found their usual practice was to withdraw from the area covered by the naval bombardment, let the landing force commence to land, and then fight from that point. If the combat resulted in victory for our side the enemy force had yet lost nothing but a little land. Our real objective was the enemy's force. Before it could be decisively defeated it had to be pursued and destroyed or captured. And here is where land and water mobility is essential. When we are victorious on our beachhead we must exploit the success. We must pursue and capture the defeated enemy and have the necessary mobility to accomplish this. This is provided through the medium of shore-to-shore operations. They are amphibious support of land warfare. The Japanese taught us how in China and Malaya. We use some of their technique.

Organization of An Engineer Special Brigade

In order to understand more fully, note the Table of Organization of an Engineer Special Brigade, illustrated by Figure 1.

It consists of three regiments which are grouped into regimental task groups, similar to regimental combat teams of an infantry division. Each regimental task group when given the proper number of attachments, is capable of handling the logistical support of one combat division. The brigade furnishes support for one corps.

The Engineer Special Brigade is a combat organization specializing in the rapid establishment of logistic support under fire. It is not designed for unlimited expansion nor for long continued operation. It is the spearhead of the fixed logistic organization which must ultimately succeed it, which we will call the Army Service Command. This organization will be capable of indefinite expansion and enduring operation. Its operating facilities take time to install. In practice the Engineer Special Brigade commences operations on D-Day and carries responsibility until the Army Service Command has established itself and taken over, usually about D plus 30. Thereafter the Engineer Special Brigade is relieved and made available for other operations, about D plus 60.

The functions of a shore party are as follows:

1. Stevedoring;
2. Lighterage;
3. Lighterage control;
4. Shore services for army ships;
5. Internal signal communications;
6. Unloading lighters at beach;
7. Construct facilities for unloading;
8. Set up and establish information center for incoming troops;
9. Determine land utilization within beach support area;
10. Establish and maintain perimeter defense;
11. Transportation of supplies to dumps;
12. Unload, store and issue supplies at dumps;
13. Construct roads, parking areas and hardstands;
14. Establish ordnance repair service for all troops within the beach support area;
15. Hospitalization, collection and evacuation of all casualties from landing force;
16. Custody and evacuation of prisoners of war;
17. Set up and establish a force water point;
18. Control of traffic on the roads.

The overhead organization which establishes and organizes this installation for a division is the regimental headquarters company and the regimental staff. It has a large signal section in order to be able to establish and operate basic signal communications for the entire beach support area. It has an embarkation section for the shipping control which it exercises. The organic troops of the Engineer Special Brigade furnish the essential services usually performed by their respective services: engineer, medical, quartermaster, ordnance, transportation corps. The actual handling of cargo is done by attached troops, stevedoring by port companies, beach labor by quartermaster railhead or service companies, dump labor by depot companies. If the assault is on limited objectives, that is, action will terminate within a limited time, the Engineer Special Brigade is the only logistic agency to operate here. If, however, the logistic agency is to operate for a long time or be built up to much more than its D-Day proportions, the work which the Engineer Special Brigade inaugurates on D-Day is taken over by the Army Service Command.

The organization which takes over the shore party commander's duties is known as a "Base Command." The Base Command consists of the following:

1. Port Command—handles shipping, stevedoring, lighterage, wharf labor and transportation, cargo control.

2. Motor Command—handles all motor transportation in base.

3. Area Command—allocation and use of areas, defense.

4. Service Command—coordination of all service functions and troops, supply, construction, medical, signal, ordnance, etc.

The troops "attached" to a shore party are usually troops belonging to the "Base Command" and will revert to the command of the base commander when he assumes responsibility about D plus thirty. The base commander arrives on the beach about D plus fifteen with his port commander, engineer and signal officer. They proceed at once to lay out their base and construct headquarters, road and signal installations. An orderly turnover of functions and responsibilities takes place between D plus thirty and D plus sixty. Thereafter the Engineer Special Brigade unit is released for further operations.

In order to carry out our mission we must give amphibious capabilities to the unit which we support. Note that the mission is to give help, and not to ask for it. This assistance may consist of:

1. Staff advice, which means amphibians must:
   a. Know the characteristics of naval amphibious craft;
   b. Know naval procedure;
   c. Be able to tie into the navy signal net rapidly;
   d. Be fully conversant with the writing of amphibious orders;
   e. Have amphibious logistical data available at all times.
2. Help in embarking, which implies:
   a. The layout of an adequate signal net;
   b. The layout and construction of a good road net;
   c. Construction of jetties and embarkation points;
   d. The organization and training of personnel to form a competent organization.

3. Help in disembarking, which means:
   a. Taking over full responsibility for the organization and operation of a beach support area;
   b. Furnishing a trained team for beach support area organization, experienced in operating:
      (1) Cargo control
      (2) Stevedoring
      (3) Lighterage
      (4) Marine dispatch and messenger service
      (5) Signal installations
      (6) Ships service
      (7) Evacuation of sick and wounded
      (8) Evacuation of prisoners of war
      (9) Establishment of dumps
      (10) Use of attachments.
4. Water transportation and lighterage;
5. Construction;
6. Operation and defense of beach support areas;
7. Furnishing a reserve of engineer construction troops.

Landing A Division Task Force

How big a job is it to land a division task force? The number of troops would be as follows:

Division	15,000 men
Air Force component	5,000
1 Engr Boat & Shore Regt with attachments	5,000
Engrs, for airfield construction, etc.	3,000
Dumps and service troops, antiaircraft, etc.	2,000
Total	30,000 men
Rolling stock of all kinds	4,000 vehicles
(Note proportion of one to seven)	
Daily tonnage requirements	1,500 DWT tons

The daily consumption of supplies would be as follows:

Drummed petroleum products (Mostly aviation gas)	300 tons
Bombs	150 tons
Ammunition	100 tons
Engineer Supplies	100 tons
Rations, clothing and other supplies	100 tons
Total	750 tons

Note that consumption is 750 tons a day, but the daily tonnage requirement is 1500 tons a day. This is because a unit in hostile country must have a reserve of supply. It cannot function without a stock level, without courting disaster, as shipping may be interrupted. The stock level is fixed by the higher commander and depends upon the local situation. Let us assume that the stock level would be thirty days of supply and that it will be attained within thirty days after landing. Then we must handle on shore double our daily consumption until we have a reserve of thirty days supply in stock. These are our critical days after landing when the beach organization must be capable of handling twice the daily consumption, and it generally does.

Notice also the large proportion of supplies which are consumed in combat—aviation gas, bombs, ammunition, etc. When we stop fighting this consumption falls off very rapidly so the consumption of supply under administrative conditions, particularly after stocks have been built up, is very much lower than in the days immediately following a landing. It also leads to very erroneous conclusions resulting from maneuvers. In a maneuver we consume none of the combat items of supply, have few supporting troops, since they are seldom available, and do not build up stock levels. Hence, a reduced strength division in a maneuver might do very nicely on 150 tons a day when the same division would require ten times as much under combat conditions.

The shipping required to move this task force will total seventy ships, as a characteristic figure, plus naval combat vessels; a very large number of ships to handle all at one time. How many ports in the world are capable of handling seventy ships almost simultaneously? They may be counted on the fingers of one hand, and this is enough for only one division. Suppose we were landing four or six or twenty divisions? The number of ships involved is staggering, and commercial ports are simply not designed to handle either men or cargo at anything like this rate. So the Amphibian Engineer who finds himself in this situation must be an expert in port expansion and development.

The shore party which is given as totaling 5,000 men breaks down about as follows:

1 Engr Boat & Shore Regt group	2,500 men
1 Port Bn of 3 port companies, which works 3 ships at 500 tons per day per ship	600
1 DUKW Company	200
1 Truck Bn of 2 companies	250
1 MP Company (regulates traffic, guards prisoners)	200
1 Amphibian Tractor Company	175
1 Evacuation hospital	350
2 QM service companies (beach labor)	400
1 QM gas supply company	125
1 Ordnance ammunition company	179
Total	4,979 men

This organization provides trucks as follows:

Engr Boat & Shore Regt	18 trucks
2 Truck Companies	80
1 DUKW Company	48
1 QM Platoon	16
Total	162 trucks

Note that some of these trucks are engineer dump trucks, used for handling cargo in the high pressure initial stage. They will haul road material later on. A useful rule of thumb is to have one truck for every ten tons of cargo to be handled daily. There will be twenty-five tractors of D-7 or D-8 capacity on the beach. There will be 126 LCM's in the Engineer boat battalion. Four thousand vehicles, if placed in column with one hundred feet of road space allowed for each unit, will require eighty miles of road. It is impossible to build eighty miles of road on a beach support area and therefore all the vehicles do not come ashore on the first day. Normally, about 50 per cent of them come in with the first combat lift, but the soldier needs these vehicles and he is handicapped in battle until he gets them all in. The first thing a shore engineer encounters is 2,000 scrambled vehicles in terrain where there are no, or very poor, roads. He must anticipate a traffic jam. He wishes he had about thirty miles of road at once and eventually builds about that much. There must also be parking areas for getting vehicles off the roads, hardstands for stores, and bivouac areas for the transient troops. Actually, a freight and passenger station has been established and both freight and troop units are streaming through and will continue to do so for a long time. Because this started with a traffic jam, the shore party commander must have good MP's to liquidate it and avoid serious consequences.

Here is a simple rule of thumb for calculating stevedoring: One port company can furnish hatch crews for the two shifts on each of five holds. That is, it can stevedore one ship. It should get 100 tons per hold per day, or 500 tons per ship per day, and this a high figure, which is difficult to maintain in practice. If a battalion of three companies worked three ships, it should get 1500 tons per day. There must be lighter capacity for unloading 1500 tons to the shore. There must be trucks to handle 1500 tons to the dump and the men in the dump to unload the trucks carrying the 1500 tons. It is fatal to put the pressure on mere unloading tonnage and ignore the rate of storage and inventorying in the dumps.

LANDING PROCEDURE

The naval sequence of a landing operation might be something like the following:

1. About D minus 5, the minesweepers move in and sweep the seas in which the fleet is to maneuver. This is a very hazardous operation. They are accompanied by naval air and naval combat units. The naval and air bombardment might start then, or certainly must start by D minus 1.

2. On D minus 1, an underwater demolition team is put ashore to demolish underwater obstructions on the beach.

3. On D-Day, at first light, about 0600, or H minus 2 hours, the cruiser bombardment commences. This is long-range heavy fire against pin-point targets. (H-Hour, of course, depends upon tides and the situation.)

4. At 0700 hours, or H minus 1, the destroyer bombardment commences. This is area bombardment and the beach and considerable areas to the right and left of the beach are covered by it until 0750, or ten minutes before H hour.

5. By this time, rocket ships have crept in toward the shore and the rocket bombardment (and sometimes air strafing) is the last fire effect before landing.

6. The first waves land at H hour, which is generally 0800, and consist of infantry and foot troops with light weapons.

7. Each succeeding wave brings in heavier equipment and weapons and more heavily equipped soldiers. In order to give the first waves firepower and mobility they are generally carried in amphibian tractors, accompanied by amphibian tanks. DUKW's have been used as a substitute for these upon occasion but are not particularly well suited. Failing these, LCVP's are used.

8. About 0820, or H plus 20 minutes, the first LCM's land with the early beach tractors and the first heavy equipment. LCM's should be plentiful from that time on.

9. About 0930, or H plus 90, the first LCT waves will land, carrying the first quantity loads of vehicles. The beach exits must be complete by that time in order that these vehicles may get off.

10. About 1000, or H plus 120 minutes, the LSM's land. Each LCT and LSM carries about thirteen vehicles.

11. About 1300, or H plus 5 hours, the LST's, carrying large quantities of vehicles, probably fifty each, will land.

12. By that time the road net must be developed. Occasionally LST's are unable to land for several days and their vehicles and cargo must be lightered ashore by the shallow draft amphibious craft of the LCT or LCM type. It is not too difficult to empty LST's by lighterage. When the LST's begin to land, the traffic build-up begins in earnest.

DESCRIPTION OF NAVAL VESSELS

What are the characteristics of some of these ships? It is important to know them.

A. Amphibious Force

The basic craft of the Navy's amphibious fleet is the APA, auxiliary personnel assault. It is primarily a personnel carrier. Usually it is a victory type ship, making sixteen knots or better. It carries 131 officers and 2060 enlisted men, 70 vehicles and 400 tons of cargo. Individual ships differ, but the hull is 459 feet long.

2. The AKA, auxiliary cargo assault, is fundamentally a cargo carrier, combat loaded so that cargo can be discharged rapidly. It is a development of the victory hull and makes a maximum of 17 knots. It carries enough personnel to handle the cargo, about 550 men, 120 vehicles, and 650 deadweight tons of cargo.

3. The AK is a straight cargo carrier. It carries a very limited number of personnel, 400 men, 20 vehicles

and 1800 tons of cargo.

4. The APA and AKA carry LCM and LCVP in their davits and are capable of unloading themselves.

5. The LST, landing ship tank, is the largest size of ramp vessel, capable of beaching. It is 328 feet long, draws 3′ 10¾″ of water at the bow, with lightened ballast tanks, but generally with a load on board it grounds in 6 feet of water. It has quarters for 163 men and carries 13 very heavy tanks or 70 lighter vehicles. The personnel accommodations are intended for the drivers and attendants of the vehicles carried. In warm climates a large number of men can be carried, sleeping on the decks. In many of the Southwest Pacific operations, up to 750 men were carried in the LST's, sleeping where they could. The average passenger load was 400. The maximum carrying capacity of the LST was reached in the repatriation program between Japan and North China and Korea, when a total of 2200 people per load were carried in LST's. The LST makes 10.8 knots. It has a long cruising range. Its bottom slope, when trimmed, is 2% so with a 2% bottom slope, a 4½ foot draught forward and a 328 foot length, the stern will draw 6½ feet more water than the bow, if the ship is properly trimmed. In order to lighten the ship forward, however, it is necessary to ballast it down aft so when the bow draws 3 feet of water the stern will usually draw 14 feet.

6. The LSM, landing ship medium, is 203′ 6″ long. It draws about 3′ 5¾″ of water forward and 7½ feet aft. It makes 13.2 knots. It carries 13 vehicles and has quarters for 48 men. It has ample quarters for an around-the-clock crew. The greatest difficulty with the vehicle-carrying amphibious craft of the navy is that few of them can make the standard fleet speed of 15 knots and the LSM was designed to fill the need for a fast vehicle carrying craft, but in order to build the speed and necessary crew's accommodations in them, the cargo capacity is seriously restricted.

7. The LCT, or landing craft tank, is a powered barge used primarily for lighterage. It is 117′ 6″ long has a 32′ beam and carries 13 vehicles. Its crew's quarters are limited and the endurance of the crew usually limits the endurance of the craft. It has a large fuel capacity and a range of about 700 miles, but light engines. It will carry 13 vehicles or 160 tons of cargo and has no passenger sleeping accommodations. It draws 4½ feet of water aft, 3 feet forward and requires about 6 feet of water to safely operate. It makes 8 knots when cruising and that is a serious handicap, because it will not keep up with anything except very slow convoys.

B. The Combat Force

1. The CV, or aircraft carrier, will be from 600 to 800 feet long, 105 feet wide, drawing 28 to 30 feet of water, and will fly over 80 airplanes. Their speed exceeds 32 knots.

2. The escort carrier, or CVE, is an unarmored merchantman equipped with flight decks. They are generally built from the victory type ship. Length: 465 feet to 498 feet; speed: 16.5 knots.

3. The BB, or battleship, has about the same dimensions as the carrier. These dimensions are usually limited by the size of the locks in the Panama Canal, which are 1,000 by 110, with 32 feet permissible draught. In our modern ships, both carriers and battleships, we are exceeding the capacity of the locks in the Panama Canal.

4. The destroyer, or DD, is approximately 340 feet long, carries 175 men and makes 35 knots. The destroyers have all the speed built into them the navy can put in a ship of that size. They mount 5-inch guns.

5. The APD, or armored personnel-carrying destroyer, was provided by the conversion of old destroyers to carry personnel for raiding parties. They include a liberal proportion of LCVP's. They carry 150 personnel only, without any vehicles except jeeps.

LOADING THE DIVISION TASK FORCE

Here is a chart showing how this division task force might be loaded out in an amphibious force:

Type	*Number*	*Personnel*	*Vehicles*	*DWT Cargo*
APA	9	19800	630	3600
AKA	3	1650	360	1950
AK	6	2400	120	10400
LST	20	3500	1000	2000
LSM	20	1000	250	....
LCT	12	314	157	....
	70	28664	2527	17950

The APA carries a battalion landing team; therefore, for each battalion in a division we will have one APA. Since there are three regiments, we must have a minimum of 9 APA's. For each 3 APA's there will be one AKA carrying the assault cargo vehicles which cannot be carried in the APA. The heavy division cargo will be carried in AK's. There have been allocated a liberal number of AK's to this particular expedition. Enough LST's, LSM's and LCT's are added to bring the force into balance. There are 70 ships that carry 28,664 men, out of a total force of 30,000; 2527 vehicles out of a total of 4,000 and 17,950 tons of cargo out of a total of whatever has been determined will be necessary, at a rate of 1500 DWT for the first 30 days.

TONNAGE

In discussing cargo, we speak of deadweight tons of cargo and we mean long tons of 2240 lbs. each. There are many different kinds of tons. There is a short ton of 2,000 lbs. and a long ton of 2240 lbs. These are measured by weight. Then there is the measurement, or ship ton, which is a convenient unit used in calculating ship's capacity. It is 40 cubic feet. Its weight varies with the specific gravity of the cargo. There is also the register ton of 100 cubic feet. Ship tons have little relation to weight. A ton of belly tanks would be different from a ton of armored vehicles.

In unloading military forces, there is impedimenta, such as troop equipment and supplies, and cargo tonnage, which is the material carried over and above the troops' equipment. After landing there is useful tonnage, or the tonnage which the troops actually will consume. The nonuseful tonnage is the tonnage which must be handled in order to get out the useful tonnage. This would include dunnage; that is the timbers which are used to pack the cargo, which is a considerable item on one ship. Nonuseful tonnage also includes miscellaneous cargo which has been added to the ship, which is of doubtful need at the point of destination, yet the ship must be fully unloaded. If not fully unloaded, the nonuseful tonnage must be handled twice, once to get it out of the way and once to get it back aboard the ship. Obviously, when discussing tonnage, it is important to know *what kind* of tonnage.

Ordinarily in an assault landing of one division, about 7500 tons a day of all kinds of cargo will be landed in the first days of high pressure landing. That means deadweight tons, measured by the ship's displacement and includes everything. After the main assault has been made, 1500 tons a day will have to be handled, but this is all consumable, useful tonnage and excludes troop impedimenta, personnel or equipment and nonuseful tonnage. The actual tonnage handled may be 3,000 to 3,500 deadweight tons daily in order to get 1500 useful tons. Troops pitch in and unload themselves. They do not require much stevedoring, beach or dump labor or even transportation, as they use their own transportation. The term "useful tonnage" is used simply because it is a convenient measuring stick of the amount of effort exerted.

SUMMARY

Let us go back to the difference between the technique of the Navy and Marines and the Navy and the Army in effecting a landing on a hostile shore, and start with a description of the first of these: as an aid in this comparison, note Figure 2.

The mission of the Marine Corps is to seize and hold the land needed for naval bases and naval operations.

The mission of the Army is to seize, hold and organize an Army base of operations.

With the Navy and the Marines, the fleet commander commands at all times. The senior Marine officer, being part of the Navy, is subject to his orders at all times. The fleet size may be anywhere from 50 to 500 vessels. These vessels are divided into combat vessels, amphibious vessels and service vessels. In addition to what has been previously described, there are minesweepers, PT's or patrol torpedo boats, landing craft support and rocket ships, seaplane tenders, submarine tenders, etc., and in the service forces there are oilers, water tankers, drydocks, shop vessels, supply vessels, etc. All the naval services are afloat. They make the naval forces fully mobile. The Navy need put no one ashore for its own needs. It puts men ashore only to help the land forces operating ashore. It occupies the land solely to protect the fleet at anchor from land fire. The control of a large fleet like this is an intricate task itself. It is handled by the naval port director who has a headquarters afloat, and controls arrivals, departures, anchorages and other matters pertaining to fleet administration. Naval command is exercised by the senior officer present afloat (SOPA). This command varies with the coming and going of various naval officers. Naval forces ashore come under the shore patrol. The naval service force commander furnishes fuel, water, repairs, evacuation and supplies, to the fleet, by lighterage between ships. It is a very large undertaking to transfer supplies between the various ships.

For operating the shore facilities of a port the Navy has an organization which it calls the "Cub." It furnishes unloading service for ships and is capable of fully operating a port up to the point of handling cargo ashore with cranes. Stevedores for the ships to be unloaded are special SeaBee units. Lighters are obtained from the naval port director, who carries them in the "garrison boat pool," which is an organization similar to a Transportation Corps Harbor Craft Company. It is equipped chiefly with LCM's, usually about 40. It has shore based maintenance, with crews trained to run their craft within the harbor. Beach labor or dock labor is furnished by "logistic support" companies. The Navy makes no use of DUKW units. A few are issued to the Marine Corps units as unit equipment. Engineering waterfront improvements are performed by naval construction battalions who build access roads, egress roads, dump roads, hardstands for stores, wharves and piers, etc. The Marines accept responsibility for cargo when they run their trucks to the beach or waterfront and it is placed thereon by the navy logistic support companies. Their responsibility therefore, starts when the cargo has been placed in their trucks by the Navy. The Marines furnish all dump organizations for their own stores. The organization provided for that purpose is the service regiment composed of a number of companies similar to our depot companies.

How simple this makes the task of a Marine division! It does not have to stevedore ships; it does not have to operate lighters; it does not unload cargo on beaches, or build roads to dumps. The cargo is shipped to the Marines by the Navy on Navy transports, unloaded and delivered to them on their trucks to travel on navy-built roads. Of course, if means are inadequate to perform these services the Marines pitch in and help out and you will often find them stevedoring ships and building roads and carrying on these other activities. The Marines have no medical service. Their medical service is the Navy medical service and their hospitals are the Navy hospitals. The Navy has sufficient of these services to support the six Marine divisions which were organized during the war. It even partly supported six more Army divisions which were used as reinforcements to the Marines. It would not be able to extend all these services to the 86 Army divisions without a very large increase in personnel.

In a Navy-Army landing, the cargo is loaded at Army ports of embarkation. It is unloaded by Army personnel.

It is carried in Army transports, lightered in part by Army lighters, unloaded on beach or docks by Army personnel. All construction ashore is by Army personnel, but the Navy does propose to furnish a naval construction battalion as a part of the shore organization which will improve the facilities for getting amphibious craft into a good beaching. The logistic agency set up on the beach is the shore party composed of an Engineer Special Brigade or regiment with Army Service Command troops attached. This may be superseded by a base command which will take over the attached Army Service Command troops, bring in more of its own, and relieve the Engineer Special Brigade unit.

In a Navy-Marine operation the shore party is furnished by a pioneer engineer battalion which is a part of every Marine division. Stevedoring is done by "ships platoons" which are improvised out of rear echelons of miscellaneous units of combat divisions. Trucks are drawn from the division. Construction work ashore is done by a naval beach battalion. This initial set-up is replaced by a Navy "Cub," to do the stevedoring, lighterage and beach labor and a Marine service regiment to do the cargo hauling, storage, and issue in the dumps.

The Navy port director comes ashore after the early phases of the landing. In the army's shore organization there is a cargo control officer who exercises complete control of cargo from the time it arrives in our transports until it is placed in the dumps. The shore party commander exercises the control over all army forces ashore except combat troops, and is generally the cargo control officer. The boat control officer exercises control over all lighterage. Officers are also designated in charge of trucks and labor.

The Army port commander generally is an officer of the Transportation Corps, who performs for Army shipping—which may be most numerous—the same services which are performed by the Navy port director for Navy shipping. The Army port commander is responsible for dispatching the ships to the docks, getting lighters and stevedores to them and furnishes necessary services, such as supplies, fuel, water, personnel replacements, repairs, etc. When the port becomes an organized port the army Port Commander takes over part of the duties of the shore party commander. The port command is generally part of a base, commanded by a base commander. Beach labor must be furnished by the Army and may come from QM service companies, ammunition companies, civilians, replacement units, casual units, or any organized or unorganized labor pool. The better trained the unit is, the fewer men are needed and the less pilferage there is, and the more effective it is. The trucks and transportation come under the shore party. Engineer and waterfront improvements are performed by the engineer shore battalion. In addition the engineer shore battalion forms a reserve which can perform any of the functions for which personnel are inadequate, such as stevedoring ships, beach labor and dump labor. Regulating this long chain of operations, placing stevedores on the ships, placing lighters alongside the ship, unloading the lighters on the beach, providing the trucks to empty the lighters, providing the men to do the work to fill the trucks, running the trucks to the dump, having them unload at the dumps and return empty for more cargo, is the duty of the regimental staff. The output of the chain is determined by the slowest and least efficient step in the chain. Headquarters of the Engineer Boat and Shore Regiment furnishes the over-all command control and communication for this whole 5,000 man set-up. That is why it is so large in proportion to the size of the shore battalion and boat battalion.

In the Army set-up there is no divided responsibility for cargo movement. It all comes under one system of control. In the Navy-Marine set-up there is a division of responsibility. It usually requires considerable effort to get coordinated action. The man who runs the ships wants to get them unloaded and get them out of the way. He has no interest in the cargo after it is ashore. The man who is going to receive the cargo is deeply interested in seeing that it is stored in an orderly fashion, so he knows what he has, and can reach it when he needs it. To bring cargo ashore in any other fashion is futile. Such cargo should be dumped at sea and never brought ashore. With the divided responsibility of the Navy and Marines, this problem often arises.

Compare the two systems and remember that they have both resulted in victory. There is nothing fatally wrong with either, but the Navy-Marine system is wrong for the Army-Navy because it ignores 50 per cent of the Army's organization. The Navy-Marine organization tends to pile cargo in the dump indiscriminately. It forces a change of organization at a critical time because the marines are forced to improvise the cargo handling facilities ashore in the first days of landing, using troops of the combat division, while the heavier naval units are coming in and getting established. Stevedoring in the Navy is better handled than in the Army, and stevedoring rates are often higher. The Army has better control over cargo and a more flexible operation. They usually do not make as good a daily tonnage record. It is definitely better in care and storage of tonnage in the dumps.

In the postwar Army there is now a conflict between the Army's amphibious technique and that used by the Navy-Marines. The Navy wants and perhaps should teach amphibious technique but they want to teach it the way it is done by the Marine Corps. In other words, they want to change the Army's organization so it would have the same relationship to the Navy that the Marines have. They want to ignore 65 per cent of the Army's strength and make no use of it, or else they don't know what they are doing. The experience of six divisions wants to outvote the 89; the experience of 18 successful amphibious operations wants to outweigh the 49. The reconcilement of these two basic concepts is one of the first problems which arises with the consolidation of the services. Obviously, it is a task which needs doing.

British Army Looks Ahead*

by Maj.-Gen. L. O. Lyne, C.B., D.S.O.**

IT is commonly said these days that the invention of the atomic bomb and the development of other weapons of mass destruction have rendered armies obsolete. It is argued that such a gigantic advance in lethal power can not fail to revolutionize the whole technique of warfare; and that land operations of the kind which we knew in the last war are inevitably things of the post.

Whilst conservatism, to the extent of stagnation, in military thought is obviously liable to lead to disaster, there is also danger in taking too long a view in these matters. For example, there was a school of thought before the last war which prophesied that the infantryman was outmoded on the battlefield; the mass of firepower which would be developed by both sides would make it impossible for an infantryman to survive. If any army had abolished infantry it would in fact have become "dead meat" in the face of an attack by an orthodox balanced force. I have mentioned this point only to stress the importance of not being too easily convinced of the revolutionary effects of new weapons.

As I see it, although the invention of mass destruction weapons is likely to cause drastic changes in the technique of waging war in the widest sense, there is good reason to believe that the conduct of land operations will not be so drastically affected. There is, too, always the possibility that, for fear of reprisals, neither side in a future war would use weapons of mass destruction. In these circumstances any nation without orthodox forces would be defenseless. Its situation would be similar to that of a commanding officer trying to maintain discipline if he had the power to award only one punishment—death. For minor offenses he would be prevented by civilized opinion from administering his only award; thus all minor offenses would go unpunished. This may be a farfetched simile but it serves to make the point.

Having convinced oneself of the necessity of having an army at all, it is necessary to consider ways and means of keeping it up to date. After a major war the overriding consideration becomes financial economy. There is no gainsaying this. Any democracy which has been involved in war cannot afford a heavy expenditure on armaments and armed forces during the period of reconstruction. Thus we are forced to examine not only the best but also the cheapest way of ensuring progress in military technique.

In the British view the most fruitful methods of achieving this are:

(a) Scientific research.

(b) Improved methods of selection and training of officers and noncommissioned officers.

(c) The provision of an adequately trained reserve.

I will discuss in turn the British Army's plans under these headings.

The responsibility for scientific research is not, in fact, vested in Britain's War Office, but in the Ministry of Supply—a separate Ministry. It receives a special allocation of money for this purpose. However, the War Office maintains the closest contact with the Ministry of Supply on all matters of its concern. There are, in fact, a large number of Army officers with user experience holding appointments in the Ministry, thus ensuring that the Army's requirements are fully understood by those responsible for research, design and production. The Army Council now has its own Scientific Adviser who, with a small staff, is available to assist in formulating specifications for new equipments. The Scientific Adviser does most valuable work by ensuring that the Army's outlook is in tune with the general trend of scientific thought.

Selection and Training of Officers and NCOs

It is a commonplace to say that the efficiency and morale of an army depend on the quality of its officers. The first essential is to ensure that the right type of man, with the inherent qualities of leadership, is selected to become an officer. The second essential is to equip him with an education which will enable him to become a master of his craft and to acquire a thoroughly flexible mind capable of dealing with new problems as they arise. We have now developed a highly scientific technique of "selection" which is applied to all candidates who aspire to a commission. By this means it is possible to select only those men who have the necessary character and personality which a modern army demands of its leaders.

Some drastic changes have been made in our plans for officers training for the future. Before the war, the majority of would-be Regular officers attended one of two cadet colleges, the Royal Military Academy, Woolwich, for Gunners, Sappers and the Royal Corps of Signals, and the Royal Military College at Sandhurst for cadets for other arms. Young men went straight to these establishments from school. During an eighteen months' course they received a predominantly military education, for which their parents had to pay. At the end of their course they were commissioned as second lieutenants. Since the war the two colleges have been amalgamated as "The Royal Military Academy, Sandhurst." Now cadets do not arrive straight from school but undergo a period of service in the ranks. It is considered that, for a short period, this service in the ranks is of the greatest value in assisting future officers in understanding the point of view of the men whom they are to command. The course at Sandhurst is now free of charge to the parents. The curriculum has been changed in order to provide a first-class education in scientific and modern subjects. Great attention is also paid to basic military qualities such as discipline and leadership, but detailed military instruction is largely deferred until the cadet has been commissioned.

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*Written exclusively for the ARMORED CAVALRY JOURNAL.

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The Army Staff College at Camberley has been reestablished on its prewar basis, but selected officers are to be admitted in future at an earlier age than hitherto, and the length of the courses has been reduced from two years to one year. Here again, the process of selection, coupled with a qualifying examination, has been instituted, whilst before the war entry into the Staff College was largely determined as a result of a competitive written examination. A new staff college has recently been added. This is the Joint Services Staff College. Officers of all three Services, as well as some Civil Servants, are eligible to attend and receive instruction on Inter-Service staff work. It is expected that the establishment of this college will go far to improve Inter-Service cooperation which is so essential both in war and peace. The Imperial Defense College constitutes the final phase of an officer's education. This college is also an Inter-Service organization and provides for the instruction of a limited number of officers of the rank of Brigadier, and equivalent, in the art of war and national war organization. A number of officers and Civil Servants of the Commonwealth countries also attend this college.

So far I have only mentioned the education of those officers who have been recognized as being likely to reach high rank. Great importance is also attached to the various "arms schools" which undertake the education of officers and NCOs as instructors and which maintain a continuous study of the tactical doctrine of their particular arm of the Service. For this latter purpose the schools of the three main fighting arms will each have a fully equipped regiment or battalion at their disposal.

Considerable research has been carried out in connection with the technique of teaching. "Method of Instruction," as it is called, plays a great part in the curriculum at all schools. The rapid turnover of men under training and the limited number of Regular soldiers available make efficient teaching all important. There will be no time to waste in the training of our peacetime army. This brings me to one of the most radical changes in the army way of life. Before the war, when we had a small volunteer and comparatively long service Army, training was for the most part confined to certain seasons of the year. The tempo varied: the pace quickened towards the end of the training "season" which usually culminated in some form of maneuvers. In the future, the greater number of units will contain a large element of National Service men undergoing their year's whole-time training. These units will, in fact, constitute a vast training organization which will be kept in continuous activity all the year round. Teaching ability will need to be an attribute of all officers and NCOs. It will be seen, therefore, that central schools for producing instructors will constitute a vital feature of our set-up.

Provision Of a Trained Reserve

For the first time in the history of our country universal compulsory military service is to be enforced in peacetime. The National Service Act of 1947, which comes into effect on 1st January 1949, provides for all males to undergo one year's whole-time service with one of the three fighting services and subsequently to be transferred to the reserve or auxiliary forces for a further six years. During this latter period each man will have to undergo 60 days' training. The young men are to be called up, at first, between the ages of 18 and 19. Students and apprentices will be able to defer their service until they have completed their studies if they wish. At any rate for the time being, agricultural workers and underground coal miners are to be deferred indefinitely.

So far as the Army is concerned the introduction of this scheme will cause great changes. I have already mentioned the general effect on the training tempo. A year is not a long time to train a private soldier in all the complexities of modern equipment and tactics. Moreover, within that time, potential officers and NCOs have to be selected and trained, so that they can take their place in the Territorial Army. It is in the latter that the great majority of National Service men will undergo their reserve training. This aspect of the scheme means revolutionary changes in the whole nature of the Territorial Army. Formerly, this force was a purely voluntary organization composed, for the most part, of enthusiasts who joined for the fun of it and out of a sense of patriotism. The majority had never been in the Regular Army and their soldiering was restricted to their spare time which they nobly devoted to military service. Whilst the spirit which inspired these men was quite first-class, the standard of their military training was inevitably not high. Their numbers were also limited.

On to this old voluntary Territorial Army it is now planned to graft the National Service element during their compulsory six years' reserve service. The voluntary element will, of course, be retained and will be required to supply the senior officers and NCOs. It is confidently hoped that they will also infuse their own spirit of service and patriotism into the National Service element.

As it is through the ranks of the Army that the majority of the nation's youth will pass, the army must accept a heavy responsibility for their welfare and character building. It is vital that this opportunity is not missed.

CARDED

Task Force Butler

by Brigadier General Frederic B. Butler

Part Two of a story covering the operations of a provisional armored cavalry unit in exploiting the invasion of southern France

MY plan was now to move the Force by bounds—the cavalry scouting, advancing, securing, and the heavy column running for it when the selected area was covered. That kept us on the road a minimum of time, saved gas and provided better insurance against enemy air observance. The first bound would take us to Oraison. The second bound would be to Sisteron itself. From Oraison the action against Digne could be supported, if necessary, or, if trouble came ahead, the weight could be thrown towards Sisteron, the day's objective.

Troop B, en route to Digne, reported resistance. Advance elements had been in town but had drawn heavy small-arms fire and withdrew. The Germans had thrown no artillery, tank or mortar fire. Scout cars and tanks were pouring machine-gun fire into the town. The Maquis attack had broken down but was reforming. Another push would go in at noon.

Troop A, pushing ahead on Sisteron reached the bridge across the Durance at la Brillane and secured it. The bridge had been damaged by bombing but the armored cars crossed. The river was a formidable obstacle and it was the bridge—or else. Our engineers still were unreported, and anyway, the river would have been too much for them. So try out the bridge we did and determined that it still had enough strength to carry our heaviest tanks. Thank Heavens for conservative French design. The only other bridge that we could have crossed on had been destroyed. I was to find out later that neither at this time nor for days later, was there a single piece of hasty bridging equipment available in the whole Seventh Army, not even an assault boat! And here we were entering the best watered section of Europe! Well, you see, in Africa and Italy the engineers never used assault boats, rafting material and the like, so they were deleted from the tables by the planners.

Squadron and Force CP opened at Oraison. Radio contact was good. We were in touch with all elements. A patrol had been sent to Malijai, thence to swing east to join Troop B at Digne. Trouble ahead! Malijai was defended. No parleying this time, and Jerry had armored cars, too. Also, he was more stubborn today. We were now shooting it out.

The platoon that had been sent off to the southwest toward Vinon reported no contact and remained in observation. The troop that had crossed to the west bank of the Durance proceeded to the outskirts at Chateau Arnoux and ran into trouble. The time had come to close the main body into the vicinity of Oraison. This was accomplished with only the mad enthusiasm of the French populace impeding progress. They actually blocked roads and streets showering the troops with fruit, flowers and wine. Discipline as to the latter held and the men were temperate to an exemplary degree.

When I say "shower" in connection with the above I mean just that. The effusive Latin spirit led to action more precipitate than wise. Did you ever try to catch an apple tossed to you as you drove by at even the moderate pace of fifteen miles an hour? Or did you ever catch a tomato square in the face doing ditto?

These pleasant demonstrations added up to a costly delay. Some vehicles still were on the road when planes came overhead. We could see they were ours—two of them—and we could hear them, too. There was an air-ground liaison team, radio and all, with us. We could hear the pilots talking to each other when they spotted our vehicles. Unfortunately, and tragically, our ground-air liaison transmitter proved to be dead—we could hear but could not talk. The pilots were a glib pair and one was for peeling off immediately. The other said he couldn't see the markings and maybe they were American trucks. And in vain the frantic operator shouted into his set. Yellow smoke went out—but went unseen. The pair in the air decided to drop their belly tanks and if the column scattered it must needs be German. Rather naive reasoning and of course the column took to the fields. And down came the planes. Score: three vehicles and thirteen good American youths.

But what about our three little wars with the enemy? Digne was going again but still tough. Prisoners had been taken, including the divisional area commander—a mere brigadier general. We were slipping; by this time yesterday we had a lieutenant general complete with staff. However stout the resistance, small arms and machine guns together with an abundance of grenades was all the enemy was showing. Grenades thrown from upper floor windows somewhat restrict the effectiveness of light armor. Put yourself in a sardine can and close the lid and see how it is for yourself. The platoon at Malijai had knocked out the German scout cars, cleared the south bank of the River Bleone, which flows into the Durance at Malijai, and prevented the Germans from blowing the bridge, but the enemy fire was too hot to permit a crossing. The Germans had dug in on the upper slopes of the hill that rose above Malijai and more power was needed there as at Digne. The fight at Chateau Arnoux had reached the parley stage.

I thereupon picked up a company of medium tanks and a rifle company from the infantry battalion and sent them off under the infantry battalion executive to clean up Malijai, then swing east and attack Digne from the west and north in conjunction with Troop B, already there and fighting in from the south. Malijai folded up on sight of the Shermans with many Germans taking to the hills. Those who were blasted out of their positions were left to the Maquis who drove into the brush like bird dogs. A small German group with two vehicles retreated on Digne. There was a large ammunition dump between Malijai and Digne and this the Germans blew while their own troops were passing —fortunately before our column had caught up, they being slower as they checked the road for mines and traps.

The big tanks reached Digne, formed up for an attack, and the infantry deployed with them. Before this force fired a shot white flags went up. Once more the all wise German warrior showed his respect for overwhelming power and this small group of attackers had over six hundred prisoners on its hands. These the French got without strings. Order was restored, troops fed, vehicles serviced and the job done. Back came this little band of warriors to the fold. Our losses for the day in this action were two slightly wounded. No vehicles were disabled.

This action across the river at Chateau Arnoux required a little shelling but the finale was SOP. Score: 150 Wehrmacht. These we had on the usual terms and evacuated them on the supply trucks. Troop A continued on and reached Sisteron—our goal for the moment—at six of a gorgeous late summer evening. Patrols and outposts were set. Troop C fanned out to the north and northwest, covering us from Banon and St. Etienne-les-Orgues.

The fate of Digne having been settled, the remaining elements of the Force moved from Oraison to Sisteron with all groups not on outpost or patrol ordered to rejoin there as well. It is always a relief to get the tag ends in and count the chickens. Dispersal is essential on this type of mission but there is always a sense of relief when dispersed units "home."

I had all my units within my communication net but still was lost from Corps. What was worse, we had run off our maps! Army didn't count on movement, at least in this direction and this fast, and sheets for farther on, to the North or West, just didn't exist when we started off. There were a few small scale maps and some road maps (thank you, M. Michelin) and these must suffice.

Just before dusk, August 19, a liaison plane came in and landed. It was our plane from Corps—the first seen of it in two days. I thoroughly expected some instructions and, most of all, maps. It will be recalled that my orders were to proceed to Sisteron and from there be prepared to move either to the west or north. Well, here I was and every one was raring to go. The air courier had a note for me from General Truscott, written the night before, apparently after my courier had reached Corps, but of this no mention was made. Truscott had the impression I intended to by-pass Digne. Well, Digne was in the bag but I could not tell him, as much as I wanted. I had no communications yet. I kept the plane with me overnight for I might have use for it in the morning.

For security of our line of communication I depended on the Maquis, and my group from Army who were Maquis "specialists" were on the jump morning, noon and night. How effective my L of C defense would have been I do not know. I am thankful it was never put to test. But I could afford no other and our supply elements reported no friendly troops following.

An outstanding individual in the Force was Major James G. Hattox, the supply officer. For two days he worked miracles and for days to come he would continue accomplishing feats. I do not think he ever slept. Even at Sisteron, 90 miles from our jump-off, we were 125 miles from the dumps and Hattox was on the road continuously. He secured one of the two decorations I was able to secure for members of the Force. The other was awarded an officer who under fire and with extreme danger to himself rescued a wounded soldier from an exposed position.

The Reconnaissance Squadron was now a veteran unit and I doubt if any other unit of its type found a job better suited to its organization and equipment than the mission in hand. This is what Reconnaissance Squadrons were designed for and for this they were a sound unit. The 117th from the beginning functioned perfectly in communications and to me this was ninety per cent of the problem. They were perfect now in the technique of reconnaissance and they certainly could carry on persuasive conversation! Their personnel was largely still of the old swank Essex Troop of the New Jersey National Guard and was plenty courageous and daring. And, too, they had learned to live in the field. It was on Saturday that we reached Sisteron. While Headquarters went about the details of outposts, patrols, supply, prisoner evacuation, checking the town and communications and establishing contact with the Maquis—the Headquarters cooks were at their task. It was late before we could break away for dinner—eleven o'clock as I now recall, but what a meal! We started off with a fine French soup, the contribution of the family on whose estate we set up. Then came fried chicken, grand french fired potatoes, hot biscuits, a gorgeous salad, crepe souzette, and coffee. Brandy and superb Chateau Yquem by courtesy of General Neurling, late of the LXII German Army Corps. The wife and daughter of the estate joined us. These brave ladies were running the farm as the husband-father was absent in Germany. So many times we encountered this situation. Sometimes the absent one had become a prisoner of war in 1940, sometimes it had been a mere case of kidnapping or impressment during the intervening years. I would like someday to tour that beautiful country and revisit the, I hope, reunited families who befriended us and so many of our aviators who had been forced to land here before liberation.

We began to pick up these stranded flyers about this time and it has always been a regret that we could not have done more for them. The press of getting on ahead and maintaining the integrity of the Force was paramount and consumed our every thought and our full time and energy. We could feed these lads, however, and evacuate them, but that was about all. On the whole, the men were in good condition, the French having done a splendid job caring for and protecting them. As for the French themselves, in this section they were well nourished and reasonably well clothed but distraught with anguish, both personal and national.

Our second night in turn was quiet. Our high powered radio from Corps arrived and we were in contact —and I was reporting every two hours. The traffic was all one way, except for the message that told me some of my patrols yesterday morning had been overly cautious. The aviator who made this report was the one who had just arrived and when I showed him this message he was very sheepish and full of stammers. I let it go at that. He was an intelligent young man and one lesson was enough.

I was desperate for instructions. It might be disastrous for a force such as mine to just sit, deep in enemy territory. I turned in after midnight without receiving the message I thought must come at any moment. Information of enemy dispositions kept building up. There was an outpost south of Grenoble. There was a mobile force in or about Grenoble. There was a large garrison —"many hundred," in Gap. Which way was I to go? I wanted to get there.

Before turning in I made arrangements for my operations officer, Major Kermit R. Hansen of Omaha, to take off at first light, shortly after five, in the liaison plane for Corps, if by that time no word had come as to our future movements. Promptly at five the efficient and dependable Hansen woke me and told me nothing had come in from Corps. He and my aviator friend were off in a jiffy. I figured that with good luck Hansen could be back from Corps by ten but evaluating all factors involving travel and a Corps Headquarters, I really did not expect him back until noon. However, I did anticipate that his visit might produce radio orders that would reach me sooner.

In the meantime, orders or no orders, there was work to be done. The artillery cub spotted some German horse-drawn vehicles and a marching column, moving southward a few kilometers below Grenoble. Our maps, such as they were showed difficult country between Aspres, some forty miles north of Sisteron, and Grenoble. Certainly the pass through the mountains was not to be given to German arms merely through inaction and want of orders. I therefore gave instructions to extend our outpost line to Col de la Croix Haute on the Mountain Road between Aspres and Grenoble and took provision to make this outpost a good strong one including infantry and artillery. We gained the pass long before the Germans approached it, and by armored patrols kept the enemy close to Grenoble. The country was so rough and mountainous that vehicular movement was confined to roads. The enemy outpost was located and routes reconnoitered which would have permitted the infantry to have taken the position from the rear. We were at the gates of Grenoble and had the plan set to crash the gate.

Ten o'clock passed; noon passed, and still neither radio from Corps nor Hansen. In the meantime, the situation in the vicinity of Gap needed attention. To be taken by surprise is as unpardonable as is the sin of passing opportunity for initiative to the enemy. The adage of my old division commander and dear friend, Charles W. (Doc) Ryder, is sound; "No Man's Land is our Land." We knew Gap was outposted and we knew there was a sizable German garrison in the town. We knew also that the chances were very strong that the Germans in Gap still were in ignorance of our proximity. At least they had apparently sent out neither patrols nor agents. The Maquis were all ears now—and so were our men. Information of any movement came quickly to me.

Under these circumstances I decided to send a strong patrol towards Gap "to protect the right flank of the Force." Aside from its garrison, Gap was critical to us in view of the network of roads that converged there. The patrol was built around Troop A and was the miniature of an armored division. Early in the afternoon the outpost position was located and successfully overrun. The Germans were caught flat footed and surrendered without firing a shot as the light tanks crashed across the trenches. Apparently there was no communication between the outpost and the garrison and the latter remained undisturbed in its Sunday afternoon's leisure.

The attacking force quickly and quietly was moved into position to assault the town. Gap is quite a sizable town surrounded by hills. Even with partisan support a fight in the town would be long and costly and an ordeal for the civilians. Captain Brown once more took it upon himself to try his hand at talking and drove in a jeep to the German Barracks. He explained to the commandant that a superior armored force was prepared to attack, and furthermore sixty Flying Fortresses were gassed and bombed up to hit the town on call! The Germans again showed their fear of the Maquis and wanted to haggle and bargain, of which Brown would have none. He broke off negotiations, withdrew a short distance, and called for fire. By arrangement, forty rounds of 105 HE landed in the barracks area in less time than it takes to tell. That was enough. White flags appeared all over. Brown went in and accepted the surrender—and then pandemonium broke. The French were hysterical.

The denouement of this happened without my knowledge. I maintained headquarters back in Sisteron waiting for a radio from Corps or at least Hansen's return. No radio came, ten o'clock came, twelve o'clock came, two o'clock came. We worked Corps on the radio and asked if Hansen had arrived. I never did get a reply to that query. Word came in from the Gap force that the outpost had been overrun and that the elements were deploying to take the town—and then silence from there. I alerted the remainder (and by now minor element) of the Force to be prepared to move to Aspres-sur-Buech and took off for Gap myself.

If we were to go north, I would be that much farther along. If I were to go west into the Rhone, we had now determined that the only practicable route was eastward from Aspres. Further, through our supply grapevine we had a rumor that part of the 36th Division was beginning to move up behind us, so therefore a move to Aspres seemed the play.

I could not account for Hansen's failure to return. I feared that the plane had crashed. Leaving the CP en route to Gap I received confirmation of the move of the 36th. On the road I met the Assistant Division Commander, Brigadier General Robert I. Stack, who was in an uproar. On the basis of the report I had had via my grapevine I had sent back MPs to hold any northbound traffic other than Force traffic at a certain point until road clearance could be established. Under the existing conditions I had to have freedom of movement on the roads. Two columns do not mix well, especially when one is armor. General Stack was terribly upset that his column had been held up. His column was some six jeeps of staff, but I was greatly pleased to hear that a combat team was following and would close in Sisteron that night. This was the most welcome, in fact the only, news of our side that I had had in days.

I explained the situation to Stack and asked him what his orders were. "To go to Grenoble," he said. I explained my predicament as to absence of orders. I told Stack I envied him the definiteness of his mission. I could not account for his having received definite instruction hours ago while I who was directly under Corps was scurrying about on my own rather than sit and let trouble brew. I was holding the bag.

Rushing off towards Aspres and Gap, I was soon passed by an L-5, our liaison plane. I could not see the faces but Hansen spotted me on the road and set down in the next field ahead. Was this a relief! But he had no mission for us.

Shortly after this my radio picked up a report from Gap. The town had capitulated and we bagged 1500 supermen. Under the surrender, the German commander was obliged to take parties to all outposts and deliver them. This he did. Reaching Aspres I turned Hansen loose with instructions to set up a CP there and move the element of the force still at Sisteron on up to Aspres. Oh yes, the engineers were now with us, too.

Despite my order to proceed to Sisteron and there await further orders, I had my force more dispersed now than it ever had been during the previous two days of the campaign. However, I believe it would have been unpardonable to have left the Col de la Croix Haute to the Germans for the taking, and, equally, it would have been foolhardy to have let word slip into the Germans in Gap so that they could organize themselves. If this were unsatisfactory to Corps, I was prepared to take the censure.

When I reached Gap, I saw immediately why the radio had remained silent. The attacking force was swamped and beside itself organizing the prisoners and extricating itself from the population, which literally had gone mad. I got more infantry in as quickly as I could. By midnight order was restored and our outposts beyond Gap had been established with dependable communications functioning all around.

Earlier in the day I had received a French officer, a Colonel Saint Savour at my CP at Sisteron. Officers of the old French Army were coming in now and the assistance of these trained officers was invaluable. This same officer came to my CP at Aspres late this same night and, assuming a continued advance to the North, he made all advance arrangements through the Maquis underground. He also took over Gap from me, and largely through his personal effort, order was reestablished. It was not our function or mission to keep order in France, but for security and for free movement we were much better off that way.

My French colonel was thoroughly familiar with the country and very much concerned over the Col Bayard north of Gap. We had not pushed out that far after taking Gap. I really felt that this was sound military advice that my colonel was giving me, though I hated to disperse any part of my small force that much. There was the off chance too that my friend might be just a bit on the side of shadow seeing. As previously stated, if one were to act on all French information at this time, one would run his legs off in twenty directions at once. Nothing, however, could be done at this hour of darkness, as it now was past eleven, but I did send for Colonel Hodge and instruct him to patrol to the pass as soon as it was light enough to see. I turned in. Were we secure? Whither would we move? What about the pass north of Gap? Was the enemy reinforcing south of Grenoble? The last radio check reported all well. With that, and a new day showing on the calendar, I turned in.

About four o'clock in the morning Colonel Theodore J. Conway of VI Corps Headquarters arrived with General Truscott's instructions. Go west, young man, go west! It was to be the heights above Montelimar after all, and at this moment of dispersion, I was to change direction. What is more I was to be on my objective before dark that night! I was better poised to continue north but that was my fault. I had made my dispositions for valid reasons and now I must work myself out of the existing situation and roll into the next. Grenoble dangled on a thread. Yet it was not to be ours. The little bug in the mission was that my objective was 90 miles from Aspres—quite a day's run even if we were all together! However, by this time we were a team, not merely an aggregation of units. Despite my bi-hourly reports, Corps had no knowledge of my dispositions or the local situation when the decision was made to head me for Montelimar.

My outposts to the north should not be abandoned. If my French colonel was correct in his estimate that Col Bayard (Bayard Pass) was the key terrain of the whole area it should be seized and held forthwith. Discussing the matter with my Corps representative, we evolved a plan of action. The 36th must relieve me towards Grenoble at the earliest possible moment. I would start at daylight with the bulk of the force and the outpost elements would follow as quickly as relieved. My position with respect to issuing orders as a Corps representative might be questioned. It was true that my normal assignment as assistant to the Corps Commander would have given me authority under the circumstances to issue orders in the name of the Corps Commander but in my actual capacity at the moment as a unit commander I hesitated to barge in on Stack with specific orders, especially since he apparently had definite instructions from somewhere to get on to Grenoble. However, I felt at perfect liberty to outline a plan for Colonel Conway to transmit should he, in his latest knowledge of the Corps Commander's plan, feel that it was consistent with the over-all scheme of things. This proved to be the case. While the Force headquarters turned to getting out orders for the morrow, Conway turned back to Sisteron and then to Corps. At Sisteron he passed orders in the name of the Corps Commander to Stack to relieve my outposts without delay.

For three successive days we had made forty-five miles per day and on this, the fourth day, we were to make 90 miles and end up astride the enemy's main axis at a point a hundred miles or more behind the front. Fortunately Hattox had us well supplied with fuel now and I had a good reserve—ample to carry the Force 90 miles and still give a reasonable combat reserve. We were building up on ammunition as the heavy expenditures at Digne had more than been replaced.

It was necessary to reorient the Maquis, and my French colonel was available immediately, having bedded down at our CP at my request. It would be daylight before we could move and we needed all the daylight possible. Would that the days were longer! At first light the point was on the move and thus, another day. Hardly had the movement to the west gotten under way when the Gap command reported that patrols had observed enemy movement through the Col Bayard. Three scout cars and either a tank or self propelled gun were reported as observed. And here I was committed to a move to the west, with 1500 prisoners of war in Gap in our technical custody, but actually in the hands of the French. An attack on Gap at this time would have been a spark in a powder keg. I therefore immediately ordered artillery, tank destroyers and cavalry to advance, seize and defend Col Bayard. Maquis provided the infantry cover. With heavy armor by his side, a Maquis was worth a lot. No sign of the 36th and they could not be raised in our radio net. I hoped for an early relief so that I could arrive on my objective with my full strength. But I was not sanguine.

The enemy force north of Gap developed into nothing more than a patrol and was driven back vigorously and successfully. Whether more enemy would have followed this single patrol had we reacted with less show of force, I do not know.

The movement towards Montelimar continued. The route lay over a formidable mountain range with a twisty road cut into the side of the cliffs. Movement off the road would have been impossible. Our path could have been blocked in any one of scores of places, but no enemy action developed, nor had demolitions been executed. Whether we have the Maquis to thank for this free open road I do not know, but open it was. As soon as the point reached the summit I closed out the headquarters at Aspres and leapfrogged on to Die. I was horror-struck at the grade and nature of the road but all elements had made excellent time and none of the heavy vehicles had succumbed.

At this point it is well to comment on the performance of our vehicles. Several of the light tanks had fallen by the wayside and a few of the armored cars were out of action. The heavy tanks were doing well but the diesel driven tank destroyers were giving trouble. The artillery brought through every single one of its self-propelled guns and that in itself was an achievement for this splendid battalion. The ordnance company assigned to the Force followed our paths closely, and sent disabled vehicles on up to us remarkably quickly. This rat race was a test for the mechanical sturdiness of American armor and the efficiency of our mobile maintenance. Both came through 100% plus. Though thin of skin and lightly gunned, our tanks were good travellers.

By midafternoon Troop B, which led the advance, reached the high ground overlooking Highway 7 on the east bank of the Rhone. It was in this area that the fight now known as the Battle of Montelimar was to develop as the U.S. Seventh Army cut the line of retreat of the German Nineteenth Army. The location was well suited for the action. Here two tributaries enter the Rhone River from the east, the Drome River on the north and the Roubion on the south, forming two sides of a battle square with the Rhone forming the west side and the foothills of the French Alps on the east, from which we were entering. In the southeast corner is Montelimar, the chief communications center of the area, and from there Highway 7 and the railroad, the German line of retreat, runs north through the narrow gorge at Coucourde to Loriol near the influx of the Rhone and the Drome. The eastern points of the square are Crest on the Drome and Charols on the Roubion. In the hills near the center the road junction of Marsanne is connected with Highway 7 by Condillac Pass. Troop B established headquarters here near Marsanne and swept two platoons south to the outskirts of Montelimar. Thus the screen through the villages of Savasse–Condillac–Mirmande was forming, behind which the rest of the force was moving. Below the villages on Highway 7 German traffic was heavy and the light tanks and armored cars immediately went into action. The confusion of the enemy as well as the destruction inflicted was indescribable. Even German planes taking off from the nearby airfield were taken under fire. Shortly after dark the enemy counterattacked in force and Troop B was forced to draw back and consolidate, but not before it had done mortal damage.

The next troop in the column, Troop C, was pushed straight through Crest along the north bank of the Drome. This column reached the bridge near the mouth of the river, to find it blown, but observed an enemy column crossing by ford lower down near the confluence of the Drome and Rhone. One platoon drove to the crossing, took the column under fire, destroyed the vehicles and blocked the ford. Another platoon moved north on the main highway and broke into still another enemy column. Threading its way through the German trucks and with all guns firing, this platoon destroyed and set afire over fifty vehicles. What the German personnel losses were was never established. Here again the enemy reacted at nightfall and it was necessary to concentrate the Troop for effective outpost duty in protecting our right flank.

The bulk of the infantry battalion, the artillery and the engineers followed closely in column and were placed in position to cover the Condillac Pass, west of Marsanne. This was my point of strength and through this pass I expected to cut the main highway. That first night we did cut the road but were unable to defend the block. After a bitter fight we fell back onto the pass, but the enemy was held at bay. This seesaw continued for two days. We just did not have the strength to force and hold and we were too tenacious to be driven away from the high ground above the road, which thus was always under our aimed fire.

Dark was closing in on us this fourth day of our mission, and with darkness there was no respite in our activity. On the move up and on arrival at the Marsanne position, my own small staff was completely occupied. As for myself, I was concerned over the infantry dispositions at Condillac and the plans there for the night. The headquarters commandant of the Reconnaissance Squadron had shown extreme judgment in picking out CP's to date so I instructed the Squadron commander to have selected a position for the night. When time finally came for me to "home" to the CP, my heart sank and sank as I drove on in the dark and followed my direction by the stars. As my heart went down, my blood pressure went up. Reaching the CP I asked the squadron executive, the senior present, how long it would take to move the CP. "Forty-five minutes, Sir," he replied. "You'll be out of here in ten" said I, and out they were. The lad who selected the CP had had a better sense of comfort and the aesthetic than he had tactical judgment. He had picked out for our headquarters an ideal position for a key element in our outpost system!

Troop A of the 117th closed in on us from Gap that night but the tanks and tank destroyers had been so delayed by the slowness of the 36th making the reliefs that they did not make it—and when they did, it was almost too late.

I still was shy some of my precious few infantry, a company that I left behind in the Gap area. There being no engineer work in hand other than road demolitions which the riflemen themselves would handle, I attached the engineer company that night to the infantry battalion. This was the first experience these men had had near or under fire and it was indeed their first exposure to enemy contact. It was a sad night for them. As a result of their own buck fever they shot themselves up and suffered more casualties than the infantry. However, as American troops will, the unit survived to eventually accomplish first rate work as infantrymen.

In a note I received from General Truscott, in addition to giving me my mission of seizing the high ground north of Montelimar, he told me that my action was to be such as to give the impression to the Germans that an armored division, or at least a major portion of an armored division, was operating in their rear. This I believe I did for in the next days the enemy reaction was fierce and determined. Just how to evaluate actual relative strength to that of an armored division calls for many processes of arithmetic—ratio of men, ratio of tanks, ratio of guns, and ratio of guns to men to tanks. Off-hand I would say I had available to me from ¼ to ⅓ of the fighting strength of an armored division.

There is a vast difference between getting an advance guard of light, fast-moving armor into an enemy stronghold, and in having a stranglehold on that enemy. Our light force had gotten on to its position and was dishing out destruction by the barrel. But for how long? The Third Army learned too in its break-through from Normandy that it was one thing to get a reconnaissance platoon into the outskirts of Brest, and another thing—in that instance, another forty-odd days of hard fighting—to master the enemy force.

The German is a fine soldier. By the time the Americans entered this war he was an experienced veteran. Where there was the will, he reacted quickly, soundly and effectively to an emergency. When he so acted, there was hell to pay. This, many high and intermediate American commanders never knew, appreciated, or understood. They were too far away from the realities of the battlefield. This in turn is as it should be for had it been otherwise, the *impossible* never would have been demanded—and having been demanded, never would have been achieved by groggy, dazed, hungry and battle weary troops.

If I had had an armored division at the time, I believe the 19th German Army would have been annihilated. Even had the 36th Division swung in behind me rather than continue north to Grenoble the effectiveness of my position would have been enhanced by geometric progress. As it was, the Germans were building up against me faster than were our forces building up. Before the battle was over, some ten days later, the whole of the 36th and part of the 45th Division were pushing at the escape route and still dismounted enemy personnel were escaping. As the main highway became blocked with wreckage and death the Germans took to paths and lanes between the highway and the river and it was humanly impossible to block movement by day, much less by night. But our fire took an appalling toll.

Morning of the fifth day broke and we were still intact. This was to prove a field day for the artillery and a nightmare in broad daylight for the command. Had there been greater infantry strength, a position closer to Montelimar could have been secured and held, but with the force available the best tactical distribution seemed to be that which we had. Our small ground-holding element, the essential doughboy, was best used in the positions covering the Condillac Pass. The outposts of the cavalry were well located as points from which patrols could operate and from which heavier elements could function to deliver direct fire on the visible roads. Protection of the left flank along the Roubion was assigned to the Cavalry. The front was long and it could be covered by patrols only. The force coming in from Gap and the Col de la Croix Haute was directed to Puy St. Martin where, upon arrival, it was to constitute the Force reserve under the command of Lieutenant Colonel Joseph G. Felber, the CO of the 753 Tank Battalion. Our artillery cubs (two now) besides spotting for the guns were keeping an eye to the south to assist the cavalry in watching the long line of the Roubion.

Although we did not hold the main east bank highway along the Rhone during the daylight hours of the 22nd, little lived to escape on that road. The artillery covered the road in the vicinity of Montelimar as well as the streets therein. Tanks, tank destroyers, armored cars, even ground mounted 57's of the infantry were pouring aimed fire at the dense traffic. In addition the 59th Armored Artillery by excellent shooting and good luck bagged several trains and the railway on the east bank was blocked. We never were able to block the west bank road or railway, but touched it up plenty. Even the "flak wagons" with the artillery battalion got in on the shooting.

Among the successful targets of the artillery that first morning were two railway artillery trains. And what a show those trains put on as cars burned and ammunition blew up. I always wanted to see what was left of the tracks where these trains stood but never had the opportunity to satisfy my curiosity.

The Germans were probing everywhere. Early in the afternoon we got a real scare. Five Mark V tanks supported by panzer grenadiers succeeded in crossing the Roubion near Cleon. Troop A fought skillfully, knocking out several of the supporting vehicles, but became cut off and surrounded. The Germans even worked into Puy St. Martin, where Felber had his headquarters. This was the time and place to use my reserve and, anticipating enemy power in this area, this was the location I had picked out from which the reserve was to operate. But the slowness of the relief at Gap had delayed this vital element of the command. It still was on the road. The tank destroyers that Felber had did excellent work and stemmed the advance. More power was needed. One platoon of Troop A still was cut off and had lost two armored cars and three jeeps. Due to the hilly nature of the country we could not raise our advancing column by radio. Its commanding officer had driven on ahead and was at the CP. Now the Germans were between us and his troops. He estimated the column could not be more than thirty minutes from the point where they would contact the enemy. Forewarned would be forearmed. Our only chance of communication was a dropped message from a cub. An artillery plane was called in, given the message, dropped it, and our rescue column arrived for a movie finish. The German tanks which had crossed the Roubion were destroyed, the infantry were driven back and on the south bank several fires burned merrily where our guns had found trucks and light vehicles. It was a good honest fight. The reserve had arrived in the nick of time. Enemy identifications made in this encounter showed we were up against the 11th Panzer Division. As "Sally and George," the German broadcasters of Anzio days, would say, "Danger Ahead!" The 11th proved to be very tough cookies here and on several later occasions on the VI Corps route to Germany.

When this situation was in hand I sent for my artillery commander to determine his ammunition status. He quoted me a stock of around sixty rounds per gun. This was much lower than had been indicated to me earlier. I thereupon set a reserve of fifty rounds per gun to be used on my clearance only. Just to add to my sense of security, half an hour later McLean, the artillery commander, reappeared with the humble information that a gun by gun check showed 25 rounds per gun on hand! Fire had ceased! The 105's of the 117th were short too. Already Hattox was concentrating on ammunition, but how soon would it arrive?

Closer to Montelimar Troop B had had a lively day of it with German patrols poking at it incessantly. All were turned back without too much penetration. Some unaccompanied enemy tanks broke into the rear areas but no crews survived to return. More 11th Panzer! By nightfall the sector was still intact, but what of the morrow?

Troop C, protecting the north flank along the Drome now had the complete Assault Gun Troop with it and enjoyed the shoot of the day. The 105's were delivering aimed fire at enemy columns west of Loriol and at a range of 2500 yards. Firing high explosive and phosphorus these guns accounted for hundreds of vehicles setting them ablaze and sending occupants scurrying. The armored cars of the troop were closer in and further harried the dismounted enemy with machine-gun fire. That night heavy enemy movement could be heard. There could be no artillery firing until ammunition was up again. During the night when the resupply finally arrived the artillery interdicted the ford across the Drome and other key points. Numerous fires indicated the concentrations were getting results.

The night was reasonably quiet and nothing transpired to lead to a crisis. By now, however, the troops were tiring. This was the 22d of August, the eighth day of continuous action for the troops. True, much of the time had been mere riding. There was the exhilaration of accomplishment and advance which serves as a stimulant of incomparable efficacy on tired soldiers. Troops can be worn to a bone by a prolonged, withering fight. The long, gaunt faces will appear. The eyes will begin to pop. But make a breakthrough and sprint and the most tired will be in the van. It is a remarkable human reaction.

Be that as it may, the men were beginning to show the effects of the strain. The morale was high. There never was a thought of giving an inch of ground. Had not every enemy thrust been turned back? Tails were in the air. Then too, the "high command" was feeling better. The whole Force was in hand. Thanks to the artillery battalion we had wire telephone connection to all major units. Further, word had come that on the morrow I would receive a regiment of the 36th. Somehow or other this regiment, the 141st Infantry, was in Grenoble and was doubling back to me immediately.

Incidentally, the trip of 141st Regiment from Grenoble to Marsanne is one of those things that can happen in war. The regiment's route practically paralleled the route of the retreating Germans and passed within gun shot of an airfield which was well protected by small caliber antiaircraft guns. For two days our patrols had been dueling with this field, and with noteworthy success! Ignorance is bliss and down came the 36th convoy into our lines without an incident.

We were set for trouble the next day. I expected an attack in any one of my critical outpost positions, if not in all three. We knew the enemy was very interested in our extreme left flank. If he could break through there we were cut off. The Condillac sector still was a hot spot but oddly enough the Montelimar corner seemed quiet. After Troop C's execution yesterday at Loriol I expected trouble there.

The first action of the day came to our left flank in the vicinity of Cleon. Troop A now had attached to it about 200 Maquis. This is the sector in which the 11th Panzers made their first attack. Today we were better organized and had our full force. The attack was spotted before it reached the Roubion and broken up somewhat by artillery fire. What was left of the attack was broken up by our tanks and tank destroyers. It was a short fight, good communications were in, and the Panzers took a shellacking.

While this fight was brewing, Colonel John W. Harmony of the 141st Infantry arrived and reported his column approaching Crest. I immediately gave him his dispositions. I wanted extra strength on the north flank and instructed him to attach his cannon and antitank companies to the Drome river force and sent a field officer to command this sector. One rifle battalion I directed to seize and hold the high ground south of Condillac and physically block the main highway. With this accomplished, the next task for the regiment was to launch a battalion attack to drive the German defenses back into Montelimar and occupy commanding ground immediately covering the town and its northern exits.

During the morning the 36th Division Headquarters also arrived. This very situation had been envisioned by General Truscott before I left the beachhead and in the event things worked out along these lines, I would pass under the command of the 36th. Major General John E. Dahlquist, the commander of the 36th arrived with just such instructions. However, he asked me to continue direction of the action until later in the day while he was absorbing the situation and getting organized. I explained my plan and he asked for no changes.

Late in the afternoon, after the Division had taken over, I made a round of the battalions and watched closely the efforts of the battalion attempting to advance on Montelimar. I had been misled as to the location of the battalion, and found the attack was poorly organized and poorly led. It looked to me then, and later proved to be a fact, that our attack had run head on into a German advance in this sector. The situation was badly involved, with the Germans in my judgment having the better of it. The 141st had not yet reached the cavalry outpost line and this had been cut through but the platoons were intact and fighting well. My immediate recommendation to General Dahlquist was that the attack be stopped, the infantry reorganize and dig in on their position, and the cavalry screen be withdrawn through the infantry. This he approved.

The real story of the Force ends with the assumption of command by the 36th Division. The mission of the command was to advance inland and then to seize and hold the high ground north of Montelimar. This the Force did. The morning after the 36th took command, General Dahlquist dissolved the Force. The units as such went back to direct Division control. However, later the same day, the Corps commander directed that the Group be reconstituted and in a fashion it was. The original units did not come back, nor could it be anticipated from day to day what units would constitute the Force. It was given missions that kept it on the move, and at times new missions were assigned before those previously assigned could be entered upon. However, there was plenty of action and some effective fighting.

The Provisional Armored Group played a telling role in the VI Corps advance northward from its Riviera landing. It is a pity it could not have been larger, or, failing that, that it was not reinforced faster. The former it could not have been. Resources available did not permit. As to the latter, that may have been just another of those innumerable "ifs" of war and history.

It is appreciated readily that best results are obtained when units have been trained together in the tactical entity in which they are to fight. Any sportsman realizes that a team of all-stars thrown together for the first time is far from an effective game-winning aggregation. Another factor to consider in this operation of the Provisional Armored Group is the fact that not only were the supply resources of the group itself sketchy at the best, but the operation was launched on the third day after landing on a hostile shore, when beachhead supply was on a hand-to-mouth basis.

This small, hard-hitting, fast-moving unit had advanced 235 miles in four days. The total advances of patrols and subsidiary forces would be several times that. Thousands of square miles had been combed and cleared. A Corps Headquarters that first had been the goal and hope of an airborne division and later the 36th Division had been snatched after the others had had their chance. The number of prisoners captured exceeded the strength of the Group, including quartermasters, ordnance, mechanics, and medicos. The count on vehicles destroyed gives each man credit for better than one and a fraction. General Truscott visualized the tactical possibility of such a Group. It was his sound decision that sent it into the valley of the Rhone instead of on to Grenoble for a hollow but sweet-sounding achievement. It was cavalryman Truscott who stipulated that the Group would be built around the Corps Reconnaissance Squadron—the 117th.

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2d Armored Division In The Ardennes Counteroffensive

PART TWO: REDUCING THE SALIENT

WITH the new year, the 2nd Armored Division began the second phase of its operations in the Battle of the Bulge. The contrast between these two phases—the action against the spearhead of the offensive, ending in the Celles pocket, and the attack to Houffalize—was striking. The two actions formed an example of the widely different conditions under which armor operated in the Ardennes. Celles had been a battle of movement, while the attack to Houffalize was a series of punishing frontal attacks, with little or no room for maneuver; Celles was fought in relatively open, gently rolling country, in clear weather with air support, while Houffalize was fought in broken, tortuous, heavily wooded country, under miserable conditions of heavy snow, ice, fog, glazed roads and overcast skies which precluded air support; Celles was a meeting engagement, while Houffalize was an attack against a determined enemy occupying well prepared defensive positions. The contrast becomes even more marked when we realize that Celles lasted but five days, while Houffalize, the division objective in this second phase, was not entered until thirteen days after the attack began; the distance covered in the attack in each case was almost the same.

On New Year's Day, 1945, the division received orders to move to a new assembly area, in the vicinity of Grandmenil, and northeast of Hotton, in preparation for a new attack. The move was begun early on the 2nd, and although the distance covered was less than twenty miles, all of the division elements were not in the new area until late on the 3rd; even then vehicles littered the route of march and had to be towed in or repaired. This delay was due almost entirely to the condition of the roads over which the move was made, and to the weather. The roads were typical of the Ardennes; narrow, high crowned, paved in most instances, winding sharply through the hills, with many steep grades, and with innumerable sharp turns through the many small villages and towns. Moving the heavy, cumbersome equipment of the division over this road net was difficult in any circumstances, but in this instance it had snowed, then rained; the temperature was now below freezing, and the brick paved roads were everywhere covered with a thick coating of ice. On this slippery surface the vehicles floundered, ending up in the ditch at almost every turn. The engineer battalion improved the roads wherever it could, and spread all of the sand it could procure, but even this was not enough. The tanks and tank destroyers equipped with steel tracks were especially helpless, for as soon as the delicate balance which they maintained in moving, by straddling the crown of the road with mathematical exactitude, was disturbed by having to move to the side to pass an obstacle or another vehicle, they invariably slid into the ditch, breaking and snarling the telephone lines laid there, and helpless to regain the road. There they remained until a heavy wrecker arrived to pull them out. It was eventually found necessary to replace all steel tracks in the division with rubber, which were more suited to operation on ice. This was done during the next two weeks, by pulling tanks by twos and threes out of the battle, changing the tracks, then sending them back to the lines.

PLAN FOR THE ATTACK

As the division assembled, plans went ahead for the attack. The SHAEF objective was to pinch off the neck of the Bulge by attacking from the north and south simultaneously, toward Houffalize. At the time, fierce fighting still raged around encircled Bastogne, and the German attacks against the heroically defended town did not cease until January 9th, ten days later. 3rd Army was to make the attack from the south, while 1st Army made the northern attack. VII Corps, composed of the 2nd and 3rd Armored Divisions and the 83rd and 84th Infantry Divisions, was to make the main effort of 1st Army, supported by the XVIII Airborne Corps on the east and the XXX British Corps, which had taken over the lines from the Meuse to Marche, on the west, both of which were to make limited attacks to assist VII Corps. The VII Corps attack was to be made with the 2nd Armored and the 84th Divisions on the right and the 3rd Armored and the 83rd Divisions on the left, the 2nd Armored having the objective of capturing Houffalize and the 3rd Armored having the objective of closing to a line east from Houffalize. The 2nd Armored and the 84th Infantry Division worked together intimately throughout the operation, units of the

84th being attached to the 2nd on several occasions, and the division itself operating in a sector to the right of the 2nd Armored, between it and the Ourthe River, from the 6th of January to the end of the operation.

JANUARY 3RD TO 6TH

The attack of the 2nd Armored Division was launched at 8:30 A.M. on January 3rd, on an eight mile front from Hotton to Grandmenil, with CC"A" on the west and CC"B" on the east. Five task forces abreast pushed through the lines of the 75th Infantry Division, in weather so foul that a postponement of the attack was for some time considered. The temperature was far below freezing; snow had fallen steadily for two days, and continued throughout the day, until drifts were sometimes waist deep. The country became more broken, and the steep, narrow roads, heavily iced, immobilized most of the armor. Fog in the early morning and snow during the day cut visibility to almost zero so that artillery observers were able to function for only one hour during daylight hours. In addition, mine fields, both friendly and enemy, were a constant hazard. In the early days of the battle, American troops had laid mine fields in many areas as they pulled back, with insufficient time in many cases to properly plot or report their location or even existence. The area in which the division attack was launched was one of these, and the advance was slowed due to the necessity of exploring and clearing many spots along the paths of advance. And once the American mines were passed, the German mine fields made their appearance. A particularly troublesome type was the German plastic mine. Undetectable with the mine detectors, and covered with a thick layer of snow and ice, many roads containing this type of mine field were considered safe for days, until the snow and ice layers were worn thin enough by the passage of vehicles to allow detonation of one of the mines. Then the area had to be blocked or bypassed until it could be painstakingly cleared.

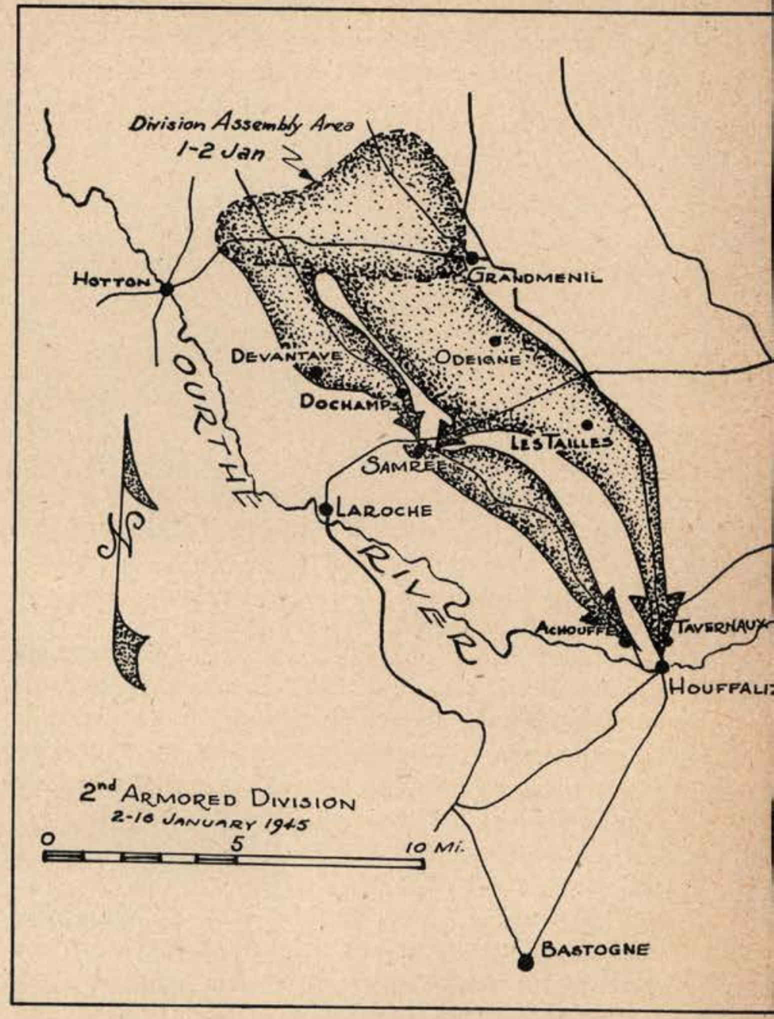
In spite of these handicaps, the line had been advanced an average of two thousand yards by dark. CC"A," on the right, attacked with three task forces abreast. The advance was slow but steady until the village of Devantave was reached. There, the enemy launched a counterattack against the advancing CC"A" column at 4:40 P.M. This was beaten off after a bitter fight, and CC"A" consolidated its positions all along the line for the night, the center task force northwest of Devantave, and the other two echeloned to the rear on either side. Early the next morning, the enemy renewed his attempts to stop the CC"A" attack, launching three counterattacks against the most advanced element, the task force at Devantave. The first two were launched in darkness, at 4:50 and 6:15 A.M., and the third at 10:30 A.M. All were repelled with heavy losses to the enemy, one tank being knocked out in the second, and two out of the six taking part in the third suffering the same fate. The CC"A" task force then reorganized, and at 1:30 P.M. launched its own attack against Devantave, through the swirling snow. The enemy reacted fiercely, sacrificing four tanks in an attempt to stop the attack. This was partly successful, the American advance being held in the outskirts of the town, and then falling back a short distance to consolidate positions in the woods west of the town for the night.

The other two task forces of CC"A" were meeting similar resistance to their advance. Enemy counterattacks, road blocks, mine fields, the weather; all contributed to a slow, costly advance for these two forces, who formed the wings of the point at Devantave. On the third day of the attack, January 5th, CC"A" launched another attack on Devantave, but was again unsuccessful. Only on the 6th, after a third attack, was the town occupied and mopping up begun, even as another enemy counterattack to retake it was beaten off. As this was being done, the other two task forces closed in to assist this attack, seizing commanding positions on both sides and southeast of Devantave.

CC"B," meanwhile, was meeting like resistance in its advance. Jumping off at 8:30 A.M. on the 3rd, its two task forces met determined enemy fire which held its advance to about two thousand yards for the day. After a night spent in preparation, the attack was resumed the next morning, again at 8:30, meeting heavy resistance from anti-tank guns, rocket launchers, artillery, nebelwerfers, road blocks and mines, in its advance towards Odeigne and Dochamps. The attack on Odeigne was continued throughout the day and into the night until 9:00, when positions were reached on the north and east edges of the town. The other task force advanced against similar resistance to a position west of the first by dark. The following morning the assault was delayed until 9:00 due to poor visibility. The task force attacking Odeigne advanced on the town from two directions against the determined German resistance. First elements entered the outskirts at 11:20, but resistance was so determined that the fight went on through the afternoon, until by 6:00 all of the town except the south edge had been occupied and consolidated. The Division Reserve, which had in the meantime been attached to the combat command and had relieved the western task force to allow it to revert in turn to division reserve, resumed the attack on Dochamps on the same day. The enemy reaction forced the attackers to a halt about half a mile from the town. During the night, patrols were pushed to within four hundred yards of the enemy positions in the outskirts of the town. During the night, also, the combat command boundary was shifted slightly to the east, placing Dochamps in the sector of CC"A," and allowing the CC"B" western task force to bypass the town and attack to the south on the 7th.

CAPTURE OF SAMREE

On that day CC"B" cut the road running northeast out of Laroche through Samree, at a point south of Odeigne. This was a distinct blow to German operations, since the road was a vital supply artery for the enemy forces still fighting to the west. The Germans were now in possession of only one good supply road in the sector, running through Houffalize. The eastern task force of CC"B" attacked early in the morning from the vicinity of Odeigne, and by 9:30 had reached its objective, the high ground astride the vital supply artery. The ground was organized, road blocks installed, and the position held until the 12th of January. The western task force attacked to the south, along with a third task force which had been constituted to join in the drive, on the same day, and with the same objective; that of cutting the enemy supply route. This force reached its objective on the next day, January 8th, then turned west to attack the town of Samree. In doing so it ran headlong into the most formidable road block ever encountered by the division. Taking advantage of the weather and terrain, the enemy had felled large trees in profusion across the road in a defile, then had heavily mined and booby trapped them, placed wire and obstacles among the branches, and lastly organized strong positions for defense of the block, employing anti-tank fire, nebelwerfers, artillery, and small arms. CC"B" attacked this position for two days, the enemy repairing the damage done during the day under cover of darkness each night, and it was not until the morning of the third day, January 10th, that the force succeeded, at 9:00, in reducing the last position and resuming its advance.



2nd Armored Division
2-16 January 1945

From the time of its capture of Devantave, on the 6th, to the 10th, CC"A" engaged in a punishing advance on the town of Samree. On the 7th, a task force of the combat command attacked and captured the town of Dochamps, which had been placed in the combat command's sector through the shift of boundaries on the night of the 6th-7th. Then the entire combat command swung south for the capture of Samree. The enemy seemed determined to hold the town, and the fighting in the snow and ice was without quarter. Against this resistance, the combat command gradually advanced, until by the night of the 9th it held positions in a semicircle just north of Samree, poised for the final assault on the town. These had not been gained without cost. In one instance, the Germans had emplaced ten tiger tanks in the edge of the woods bordering a road running north out of Samree, in a narrow gorge. Snow had drifted over them until they were completely camouflaged. They waited quietly, and as the first American tank loomed up out of the fog at point-blank range, a sudden burst of fire destroyed it. Maneuver was impossible in the narrow defile, and every tank that attempted to rush the position was quickly knocked out, despite all of the covering fire that could be brought to bear. It was not until concentrated fire of medium artillery had been placed on the position throughout the night that CC"A" was able to push through the position, the tanks roaring through over the icy road made passable by patrols which had quietly spread cinders and sand into the very heart of the German position under cover of darkness. Casualties in the division in wounded and sick, the latter due to weather conditions, were high, as were vehicular losses. Included in the casualties was the regimental commander of the combat command's armored regiment, killed in the assault which gained the final positions facing Samree.

On the 10th the entire division concentrated on the assault on Samree. The eastern task force of CC"B" held its positions on the Laroche–Samree road below Odeigne, while the western forces, having overcome the road block east of Samree, joined in the attack on the town. The CC"A" commander, knowing that an attack in daylight across the open terrain just north of Samree would be almost suicidal, ordered his western task force to make an initial assault on the town under cover of darkness. Accordingly, a battalion of tanks launched an attack at 7:30 A.M., over icy roads, in snow and darkness, from its positions northwest of Samree. Some of the tanks slipped off of the road and stalled, but the bulk roared into the town in less than fifteen minutes after jumping off, taking a dazed enemy completely by surprise. The remainder of the task force followed in the growing light, to close with the bewildered Germans engaged in a stiff fire fight with the tanks in the town. The eastern task forces also joined the assault, losing two tanks when they turned over on the steep icy roads. Each task force pushed a smaller force through the town and established road blocks on the Laroche–Samree road, one east of the town and one west.

The western task force of CC"B" to the east, had meanwhile pivoted to the south and taken up positions southeast of Samree, to prevent any relief of the town by the enemy from the south. The fight in the town itself went on for some time, resistance decreasing as it was mopped up, until by midafternoon Samree was secure. The town had been defended by several battalions of infantry and twenty Mark V tanks. Very few of the infantry escaped, and most of the tanks were knocked out in the fighting, the remainder being captured.

On January 11th, the division paused to gather itself for the final drive to take Houffalize. The day was spent in reorganization and maintenance and repairs, sorely needed by the men and vehicles after nine continuous days of fighting, day and night. Units were reorganized and regrouped, replacements for men and vehicles brought up, and orders issued for the continuation of the attack. The division zone was narrowed, to allow for greater weight in the attack, but the dispositions of the combat commands in relation to each other were not changed.

End of the Bulge

The attack of both combat commands jumped off again at 8:30 A.M. on January 12th. During the first two days resistance was approximately the same as it had been during the first phase of the battle. The division reconnaissance battalion, attached to CC"A" on the right, engaged in a stiff fight to dislodge a German battalion intrenched in the buildings and grounds of a large farm just below Samree. The position was captured during the afternoon of the first day of the attack, with 107 prisoners being taken, including the Battalion Commander and his entire staff. During this same period, the division reserve command, attached to CC"B" and acting as one of its task forces, also captured a German command post. Among the items captured was a sack of American mail, and among the letters in this sack was one, a special delivery, addressed to the Colonel commanding the task force which made the capture!

The attack then settled into a vicious, continuous fight against tenacious rear guard action. The German units, although without hope of keeping their salient into Belgium open, retreated slowly, fighting at every possible position, and only withdrawing after they had exacted as large a toll of American casualties as possible. Even so, the casualties caused by the weather far exceeded the dead and wounded, and continued to mount until the end of the operation. The snow, ice and bitter cold were more formidable enemies than the Germans. If the wounded were not recovered as soon as they were hit, they froze to death almost immediately. Winter clothing was distributed, but the supply fell far short of the actual needs, particularly in the case of footwear. A shoepac was improvised by wrapping several thicknesses of blanket around the foot and then wearing an overshoe over this. But the infantry, operating continuously in the snow, sometimes in foxholes for days without an opportunity for exercise and movement, still suffered heavily from trenchfoot. Camouflage clothing was another problem. The OD uniforms of the soldiers stood out glaringly against the snow, while most of the enemy troops were equipped with white snow uniforms. White sheets and mattress covers were used to overcome this to some extent, but the larger supplies of winter camouflage suits, shipped from the states, did not arrive until later. The tanks were also painted white, to assist in blending them with their background. Hot food was sorely needed in the lines, but under the conditions of the battle it was often impossible to get it up, and emergency rations, sometimes frozen so that they had to be thawed by placing the cans on the exhaust manifold of the vehicles, were the usual fare.

Despite these handicaps, the advance of the division continued for four more days. On the 15th CC"A" reached Achouffe, only fifteen hundred yards from its objective, the Ourthe River, and during the night dispatched patrols to the river. CC"B," on the east, reached the town of Tavernaux late in the afternoon of the same day. Patrols went into Houffalize shortly after dark, returning after midnight to report the town unoccupied.

January 16th, 1945, marked the end of the Bulge. At 9:30 A.M. a patrol from the division reconnaissance battalion (attached to CC"A") which had worked its way down to the Ourthe River just west of Houffalize during the night, discovered a patrol advancing from the south toward them, across the river. The CC"A" patrol held its fire, and as the opposing patrol advanced, they recognized it as American. In a few minutes the two had joined. The southern patrol was from the reconnaissance battalion of the 11th Armored Division, part of Third Army, and the juncture of it with the division patrol was the juncture of First and Third Armies, and the end of the Bulge. CC"B" had in the meantime occupied Houffalize, the division objective, and completed the division mission.

During the next three days the division held a defensive line four miles long along the Ourthe River in the vicinity of Houffalize, using a minimum of troops while the remainder of the division recuperated from the arduous battle it had just been through. The division defensive line was gradually taken over by other units, and on January 20th, the division began moving to an assembly area just south of Liege for a rest before beginning the planning for future operations.

Thus we have the 2nd Armored Division's part in the Ardennes Counteroffensive. In two distinct operations the division had first assisted materially in stopping the German offensive. Then, moving quickly to the east, it had formed the spearhead of the First Army's drive to the south to pinch off the point of the

Bulge. In both it had been eminently successful, and it could look forward to the battles that were surely to come with the confidence born of the ultimate test of battle worthiness, passed with flying colors.

The end of the Bulge also marked the end of German hopes of winning the war. All the enemy could now do was to prolong it as much as he could, but the end in any case was inevitably the same. His carefully hoarded military might had been spent, and there was not enough left to fill the gaps through which the Allied attacks would surely come.

The effect of the Bulge on the Allied armies was no less marked. It had killed all inclinations to over-optimism, and now the entire line settled down to a determined campaign of attack, to physically occupy the whole of Germany, if necessary. Gone were the bright hopes of a sudden German collapse. An enemy which could mount and execute an attack as formidable as the Ardennes Counteroffensive, in the midst of a defensive campaign, would not surrender to a static foe.

The part which the 2nd Armored Division played in the battle was only one of the scores of similar operations which formed the whole of the German defeat, but it serves as a striking example of the heroic struggle in this, the most severe test of American troops in the European war. What Von Rundstedt could not see, on that winter day in the Caserne below Krefeld, was that, less than five months later, the same division which was to destroy his prized 2nd Panzer Division would, in its advance to the Rhine, occupy this same building, and use it as its command post, there to plan further attacks against his dwindling army.

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BOOK DEPARTMENT

The Armored Cavalry Journal

OTHER BRANCHES

Brigadier General Wendell Westover

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By Colonel Charles M. Dickson

(Editor's Note: We had planned to carry an article on the Organized Reserve Corps in this issue, however, ORC is under study, and we hope to have an article for the May-June issue covering the new program. Next issue will feature a statement by the Chief, National Guard Bureau, along with an article on the Guard activities.)

The part that the non-professional soldier has played in the defense of this nation is indeed a tribute to the self-sacrifice, courage and high ideals of a vast segment of the American people.

Our country, by virtue of its traditions and form of Government, has never maintained a large standing Army. It has relied on the individual citizen to enter the military service in time of need, to serve until the emergency is resolved.

The very nature of the founding of this Government placed the citizen of the U.S.A. in close relation to its National Defense. In the framing of our Constitution, nine of the eighteen powers granted to Congress in Article One relate directly to the National Defense.

Our concept of government and our way of life do not lend themselves to the maintenance of a large peacetime force. Rather, our policy is to maintain a moderate professional force augmented by organized, trained and equipped Reserve forces.

Based upon the experiences of the past and the exigencies of the future, the Organized Reserve Corps is at this moment undergoing a comprehensive appraisal. The result of this analysis may well bring about the implementation of a new program, designed to create a truly effective adjunct to our defense scheme. Attention is being given to such important aspects as organization, facilities, training and equipping for any possible war of the future, together with incentives such as pay, promotion and retirement.

Since, in time of war, the reservists comprise the greater portion of our forces, full support of a strong, well-equipped, highly trained Organized Reserve Corps is requisite to our National Security. Attainment of security forces in actuality promises to be our best insurance for peace.

The service of the Armored Cavalry Journal as a medium for the promotion of understanding among our various arms, branches and components, is most commendable. Only by concerted effort can we meet and acquit our responsibilities as Americans.

Brigadier General, U. S. Army,
Executive for Reserve and R.O.T.C. Affairs.

ORGANIZED RESERVE CORPS

A Reserve Training Program

by Major Nathan M. Quinn

[EDITOR'S NOTE: The training program in progress for reserve components is closely related to our program of national preparedness. The schedules in operation at various points throughout the country show a trend in the right direction. It is particularly heartening to see the use being made of the speaker's platform to provide qualified lecturers on specialized subjects. There is a lucrative field to be tapped in securing well-known figures in the fields of government, education, business and diplomacy to supplement the purely military diet, thus injecting novelty, interest and remuneration into the course of instruction. The increasing recognition of the importance of a knowledge of foreign affairs as a basic part of military training is gratifying.

In the interest of supplying a medium for the presentation of ideas of value to reserve instructors, the ARMORED CAVALRY JOURNAL publishes the following schedule set up at Boston, Massachusetts, for the units indicated. Major Nathan M. Quinn has prepared this program.

Major Quinn stresses the importance of enlisting the aid of the students in the procurement of speakers. Interest in the course is heightened by this participation in the activities related to planning the instruction.

Major Quinn sends meeting notices to all members of the class, which serve in turn as the pass for entry to the Army Base. This program is comprehensive, and may well be of help to other instructors in setting up or broadening their programs. The period covered is September, 1947, to June, 1948.]

PRIMARY MASTER SCHEDULE
20 Hours

Guest Speakers & Films, Cav & Arm Subjects
Methods of Instructions
Customs of the Service
Domestic Disturbances & Martial Law
Organization of RA & ORC
Historical Illustrations
Training Aids
Air Portability
Radio Procedure & Nets
CPX, Staff Procedure
Estimate of Situation
Tactics of Tank Company
Reconnaissance, Mounted & Dismounted
Amphibian Intelligence
Infantry, Tank, Artillery, Engineer Team
Breaks in meetings
Free time for C.O.s & Instructors for Ideas plans and announcements.

SUPPLEMENTARY MASTER SCHEDULE
20 Hours

Command Post, Orgn & Opn
Communications within the Unit
Organization of Armored Units
Tank and Armored Cavalry Gunnery
Adjustment of Fire by FO methods
Bridges
Infantry, Tank, Artillery, Engineer Team
Orders and Reports
Reconnaissance, Mounted & Dismounted
Tactics of Tank Battalion
Orgn & Tactical Employment of Amphibian Tank & Tractor Battalions.
Specialist Training
Commanders time for review & retraining
Map & Aerial Photo Reading
Historical Illustrations
Supply
Routine Breaks

SPECIAL SUBJECTS AND SPEAKERS SCHEDULE

Units	*Date*	*Speaker or Officer in Charge*	*Subject*	*Place*
304th Cav, 321st Cav 818th Tank Bn, 817th Tank Bn	8 Sep 47	Unit COs	Training Schedules	7th Floor Army Base
321st Cav Rcn Sq	24 Sep 47	Lt. Col. Costas Caraganis, CO	Recruiting of Enlisted Res Cadre	Federal Bldg 7th Floor Room 720
304th Cav, 321st Cav 818th Tank Bn, 817th Tank Bn 94th Div Rcn Trp, 111th OR Comp Gp (Cav & Arm)	20 Oct 47	Prof. Demes Harvard Univ, Prof of Psychology & Mr. Constantine A. Triantofyllakos, Greek Consul at Boston	Political Situation in Greece Leading up to U.S. Loan & and its Significance to the Future of Greece	General Fox Connor, Auditorium, 4th floor, Army Base, Boston
304th Cav, 321st Cav 818th Tank Bn, 817th Tank Bn 94th Div Rcn Trp, 111th OR Comp Gp (Cav & Arm)	17 Nov 47	Mr. Peterson, U. S. Dept of Agriculture & Dr. Carl F. Dunker, Ass't Dir of Research Chas. M. Cox Company	Inspection of Produce purchased by the Army in the Open Market. Dehydration of food and canning as it applies to the Army	General Fox Connor, Auditorium, 4th Floor, Army Base, Boston
304th Cavalry Group (all Cavalry & Armored Officers invited either or both days)	13 & 14 Dec 47 (Sat & Sun)	Col. Richard Hosmer CO, 304th Cav Group	CPX W/similar and higher echelons of Command	8th Floor, Sec F West Army Base, Boston, Mass.
304th Cav, 321st Cav 818th Tank Bn, 817th Tank Bn 94th Div Rcn Trp, 111th OR Comp Gp (Cav & Arm)	Jan 1948 (Date to be Announced)	Prof Frank Schmitt, Prof of Biology at M.I.T. Cambridge Mass	Development of Weapons during WW II	General Fox Connor, Auditorium, 4th Floor, Army Base, Boston
304th Cav, 321st Cav 818th Tank Bn, 817th Tank Bn 94th Div Rcn Trp, 111th OR Comp Gp, (Cav & Arm)	Feb 1948 (Date to be Announced)	Lt. Col. Costas L. Caraganis, CO 321st Cav Rcn Squadron	Tank, Inf, Engr Team. Battle Experience CCA 4th Arm Div WW II	General Fox Connor, Auditorium, 4th Floor, Army Base, Boston
304th Cav, 321st Cav 818th Tank Bn, 817th Tank Bn 94th Div Rcn Trp, 111th OR Comp Gp, (Cav & Arm)	March 1948	Capt. Edward Riccio Commo Officer 321st Cav Rcn Sq	Army Radio Nets & Procedure Part 1 CPX	General Fox Connor, Auditorium, 4th Floor, Army Base, Boston
304th Cav, 321st Cav 818th Tank Bn, 817th Tank Bn 94th Div Rcn Trp, 111th OR Comp Gp, (Cav & Arm)	April 1948 (Date to be Announced)	Capt. Edward Riccio Commo Officer 321st Cav Rcn Sq	Part II, CPX	General Fox Connor, Auditorium, 4th Floor, Army Base, Boston
304th Cav, 321st Cav 818th Tank Bn, 817th Tank Bn 94th Div Rcn Trp, 111th OR Comp Gp, (Cav & Arm)	May 1948 (Date to be Announced)	Major Stanley Tyler Ex Off 321st Cav & 1st Lt. Hugh Jones Adjt. 321st Cav	Chemical Warfare Service WW II Tactics of Tank Co; Prisoner of War Experience in German Prison Camp	General Fox Connor, Auditorium, 4th Floor, Army Base, Boston
304th Cav, 321st Cav 818th Tank Bn, 817th Tank Bn 94th Div Rcn Trp, 111th OR Comp Gp, (Cav & Arm)	June 1948 (Date to be Announced)	Hon. Henry Cabot Lodge U.S. Senator	Mr. Lodge's Subject to be announced at a later date.	General Fox Connor, Auditorium, 4th Floor, Army Base, Boston

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Armored Cavalry Journal

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Military Bridge Development

by Lieutenant Colonel Jerome L. Spurr

MILITARY BRIDGES are portable, temporary structures designed to meet the load requirements of troops with their armament, equipment and supplies, and erected to facilitate their movements in field operations. In this article, we shall be concerned only with that type used in the crossing of water obstacles, that depends for its support (either in whole or in part) on the buoyancy of floats or pontons.

Though the distinction between a tactical and a nontactical bridge is not a sharp one, this discussion will deal only with the tactical type of structure where speed of movement, assembly of parts, and erection with minimum essential equipment under battle conditions are prime requirements.

EARLY HISTORY

Our present-day ponton bridges are a development of the ancient bridge of boats. Well known to every schoolboy are the two bridges of this type built by Xerxes over the Dardanelles, then known as the Hellespont, in 480 B.C. According to Herodotus, these structures were about three-quarters of a mile in length. Buoyancy was provided by galleys placed side by side, lashed to each other and anchored, except where gaps were provided to permit water-borne traffic to pass. Six cables, two constructed of flax and four of papyrus, were laid across the line of boats and anchored on each bank. These cables supported a plank floor which, in turn, was covered with brush and topped with a layer of earth to provide a smooth, cushioned roadway. This bridging operation, though unopposed and nontactical, was a complete success. In the course of a week, the two bridges were reported to have carried without accident a military force of more than three and one-half million men and many thousands of camp followers, horses, mules, elephants, and camels.

The first historical use of ponton trains was made by Alexander of Macedonia in the crossing of the Jhelum River, then called the Hydespes, in India against Porus about 327 B.C. While no floating bridge was constructed in this crossing, it is significant that, with respect to present design, the pontons were transported in sections to the vicinity of the river at a site safely removed from the defended bank, assembled, and used for ferrying in a surprise crossing.

Bridging was further developed by the Romans, particularly by Julius Caesar who placed great emphasis on the engineer training of his army. By the time of Julian's campaigns against the Germans from 357 to 361 A.D., the Roman Army was equipped with light ponton bridging, including boats consisting of a wooden frame covered with a leather skin.

By the seventeenth century, the French and Dutch were using similar type pontons in their bridge trains, but utilized tin and copper, respectively, for the covering. In our Light Ponton Bridge, 7½ ton, Model 1926, an aluminum skin was first used over a duralumin frame. By the middle of the eighteenth century, the Russians developed a ponton of tarpaulin stretched over a wooden frame which could be dismantled for transportation. In 1853, the French adopted a flat bottom, wooden boat as their standard ponton. In 1861, at the start of the Civil War, the engineer floating equipage consisted of about 160 boats of the French model with the necessary stringers and flooring, known to the "trade" as balk and chess, anchors and cordage, and a number of trestles and Russian canvas boats, according to General J. G. Barnard's report on engineer operations in the Peninsular Campaign.

Prior to the introduction of the French and Russian types, it is interesting to note that in 1846, ponton equipage utilizing inflated rubberized canvas floats was adopted and furnished to Generals Scott and Taylor for operations against Mexico. The floats, consisting of three parallel rubber connected cylinders were about 20 feet long and five feet wide. The cylinders were subdivided into three compartments, each being furnished with a nozzle for inflation by a pair of bellows.

Though the equipment arrived too late to be of any real service in the war, it was standard bridging until 1858. By this time, the sulphur used in vulcanizing the rubber had formed sulphuric acid which destroyed the canvas. Damage by wear on gravelly beaches, vulnerability to rifle fire, and oscillation sufficient to make the bridge unsafe for use by horses were some of the additional defects attributed to this type of float.

MODERN DEVELOPMENT

The first important change in heavy floating equipage from the Civil War type was the 23-ton ponton bridge, Model 1924. A steel trestle was used to accommodate changes in water level, which consisted of a steel latticed girder transom, columns of steel tubing, steel shoes and chain hoists for adjusting the transom on the columns. The river end of the hinge span was supported by a hinge sill suspended transversely between the first and second boats instead of directly on the first boat as in the old model. This model provided a stronger trestle and distributed the load on the hinge span raft. The size of balk, chess, sills, and pontons was increased to take the heavier loads. Through the use of rigid metal balk fasteners which replaced the rope lashings on the former model, a considerable amount of continuous beam action was introduced so that as many as five pontons assisted in providing buoyancy.

In 1938, the 25-ton ponton was adopted. In this model, the wooden ponton weighing approximately 4,000 pounds was replaced by the aluminum type, followed later by a steel one, owing to the use of the lighter metal in the airplane industry. The aluminum ponton weighs 2,600 pounds and the steel type 4,200 pounds. The ability of a light metal to reduce weight was clearly demonstrated in this model. The steel type was too heavy to be lifted and carried about readily by hand though this means could be used. A three-boat hinge sill raft was used to receive the load coming onto the floating section of the bridge from the trestle. This bridge continued as the standard ponton type until replacement by the M-4 bridge after World War II.

A distinct change in type of equipment occurred in 1942 with the introduction of the steel treadway bridge designed to furnish a rapid means of stream crossing for vehicles of the armored force. It consists of pneumatic floats supporting a pair of steel treadways rigidly joined end to end to form a continuous set of tracks. When shallow banks or shoals prevent the use of floats, the steel treadways can be supported on 25-ton trestles. The M-1 model was superseded in 1943 by the M-2 model with a wider track, greater clear width between outer curbs and rubber floats with increased buoyancy.

In addition to transporting the bridge equipment, bridge construction trucks were equipped with a hydraulic crane which can lift two treadways from the truck and place them in position on a float in a single operation. Three lengths of single track or two lengths of double track may be raised into position after first unloading and then connecting the treadway sections.

The development of floating bridges since the advent of motorized vehicles has become like reconnaissance a continuous requirement. Prior to the advent of the heavier loads of modern wheel and track vehicles, floating bridge equipment changed slowly. It was not until after the experiences of the First World War that the heavy bridge train, Model 1869, developed during and after the Civil War, was superseded by the Ponton Bridge, 23-ton, Model 1924. The model 1869 bridge had a normal capacity of two and one-half tons of gross load which was sufficient to accommodate the loaded escort wagon.

It is essential that the construction of a bridge follow the seizure of the second objective in the bridgehead operation. This will eliminate ground observed artillery fire from the selected site, and effective small-arms fire (which is presumed to be removed upon capture of the initial objective). The early urgent requirements for the forward displacement of armor and supporting artillery in a coordinated attack beyond the far shore, on the other hand, frequently lead in practice to the initiation of construction well in advance of the capture of the first two bridgehead objectives. Since time is of such tremendous advantage in consolidating the bridgehead before enemy reserves can be assembled for a counterattack, the tactical conditions under which the bridge may be required to be constructed merit particular attention in the design of floating structures.

Bridge Requirements

In order to evaluate progressive steps in the development of floating equipage and to use the experience of the past to assist in the solution of present problems, it is desirable to review the characteristics of a serviceable bridge. Commencing with general features and a study of how requirements have been met, it is proposed to develop the definite requisites of the present and the indications of future demands. Since a healthy discontent with present limitations is one of the best ways to escape the pitfall of complacency, our present progress, like that of the past, should be considered a stepping stone to future improvements. For this reason, the emphasis should be on continuous effort to overcome our present shortcomings and anticipate future trends.

A bridge must have the required capacity and buoyancy which will expediently accommodate loadings of the weight, size and type employed in the unit for which the structure is designed in average stream velocities.

It should be light in weight as a whole to keep transportation loads at a minimum, and in its component parts to permit erection by manpower as an alternate method. High strength and lightweight alloys should be utilized to the fullest extent. The size of individual members should permit them to be readily transported in standard vehicles and trailers as mobile units. Rapid and simple erection is required if the equipage is to serve its purpose of permitting tanks and mobile heavy weapons to closely support the assault waves. It should be flexible, insuring an economy of material and effort through use of component parts for rafts and lighter load structures capable of conversion to the heaviest type bridge. Damaged parts should be easily replaceable with minimum interruption to traffic. The design should permit removal of floating bays for passage of river traffic and debris, and shore connections must provide adequately for water level fluctuations and unstable foundations.

Maintenance should be facilitated by a durable structure able to withstand rough usage and capable of repairs in the field.

The bridge must be resistant to enemy action and

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stream irregularities including high velocities and debris. Briefly summarizing, the desirable bridge should have the following characteristics:

1. Strong
2. Light
3. Mobile
4. Simple
5. Flexible
6. Durable
7. Invulnerable
8. Stable

Present Developments

In 1945, the M-4 bridge was adopted which replaced the 25-ton ponton model, but does not embody all of the desirable characteristics of the treadway. The deck is formed of hollow aluminum alloy deck balk which serve as both stringers and flooring. The balk being buoyant preserves the flotation characteristic of the wooden type in addition to providing increased strength. The balk can be used as floats and decking for a footbridge, or for bridging short ditch spans. A light load can be put across the M-4 bridge with a ponton knocked out.

The floating spans are supported on streamlined nestable half-pontons of aluminum alloy fastened stern to stern to form a whole ponton and spaced 15 feet center to center. For 25-ton loads only the half-boat need be used, an additional half-boat being added later when the need for increased capacity develops. In a like manner, damaged pontons may be readily replaced by half-boats. As a result of model studies of streamlining requirements, the ponton "nests" in a high velocity current so well that while the water may be higher than the gunwale, none enters the boat. Improved streamlining has also minimized the problem of debris in high velocities. With currents of 10 feet per second, or greater, a 100 per cent reinforced bridge will pass debris beneath the pontons.

Continuous deck connections are used when possible between shore pontons and abutments, but where high banks or variations in river stage require them, trestle bays are available.

The M-4 bridge can be utilized as a floating or fixed bridge, a combination of both, or as a raft. In a five-foot per second current with a 20-balk deck measuring 15 feet in width, it will carry a class 60-ton load. The capacity can be increased by the addition of an extra triparti ponton to 100 tons with the same stream velocity, and to an estimated 75 tons in a current of nine feet per second.

Under favorable conditions, the floating bridge M-4 has been erected from transportation at the rate of about 125 feet per hour when no trestles were used. Under similar conditions, the treadway bridge can be constructed at the rate of about 170 feet per hour.

Pneumatic floats with saddle adapters designed for use with aluminum deck balk are utilized in the M-4 bridge for sites on soft or swampy ground where adequate support for trestles does not exist, and on long shelving beaches where pontons may be grounded.

Conclusions

In the floating bridge M-4, many changes in design have improved the operating characteristics found deficient in the equipage of World War II. The progress made to date is indicative of further successful developments at a rate which should keep well ahead of future needs.

Reviewing our bridge requirements, we must have a structure that will carry the present loads and any foreseeable future ones. While the M-4 bridge has adequate capacity for present needs, the way for increased loading is open through the use of the three section ponton with a square-end center section to which the outer half-boats may be fastened.

The accelerated advances in metallurgy during the war and the enormously increased productive capacity of aluminum and its alloys have served and should continue to provide increased strength of bridging material without excessive increase in weight. While the M-2 treadway has a weight in pounds per linear foot of about 660 as compared to the M-4 floating bridge with a value of about 550, the weight per linear foot per ton capacity is about 14 for the former and 9.2 for the latter.

As previously pointed out, the treadway type constructed with the use of the bridge truck continues to be the more mobile of the present bridges due to space requirements for transportation and mechanical handling. Single unit truck transportation such as is used for the treadway type is desirable over the trailer form of transportation used for the M-4 pontons. Less parts help to make the treadway bridge easier to construct than the M-4. The elimination of chess as used in the 25-ton ponton bridge is a progressive step in simplification, and further progress may be expected.

Flexibility has been improved considerably in the M-4 type which permits increased load capacity by additions to the bridge in the water of boat sections. Through the addition of deck balk as needed, the required deck space to accommodate vehicles of varying width may be readily obtained.

It is believed that the M-4 type has resulted in improved durability. The metal deck has removed the need of floor treads required with the 25-ton type.

Because of the ease of removal of boat sections and the buoyancy of pontons and balk, the M-4 type is less vulnerable to enemy action. The use of metal in place of wood or rubber has decreased its weakness to incendiary attack.

Streamlining has produced a bridge in the M-4 type which is more stable, particularly in rapid currents, than any type which we have previously employed.

Much development and testing are still needed, including use under cold and tropical conditions, and ground and air transportability studies. The goal is an all-purpose type of structure embodying the inherent advantages of the best type of single purpose bridge under all foreseeable conditions.

Overhaul Military Justice

by Colonel Charles M. Dickson[*]

MILITARY Justice is long overdue for a complete overhauling. The time has come to revise and rewrite the antiquated "Articles of War" and the "Articles for the Government of the Navy."

With the unification of the Armed Forces now is the opportune time for Congress to enact a law revising and improving our "Military Penal Code" as applied to all members of the Armed Forces. There is no need for separate laws and rules of procedure in each Service.

Another important step necessary to improve and establish a system for the fair administration of justice in the Armed Forces is an adequate appellate court of review.

I have in mind an Armed Forces Supreme Court with final appellate jurisdiction of all cases tried by general courts-martial—Army, Navy, and Air Force—and I suggest that there should be a "Judge Advocate General of the Armed Forces" having powers and duties in cases involving military law, similar to those of The Attorney General in cases involving civil law.

There is a "hidden fluke" in Article of War 50½ which was enacted by Congress in the year 1920 as a result of the popular reaction that existed then against unjust sentences imposed by General Courts-Martial during World War I. This Article was an attempt by Congress "to provide for more effective review" of sentences by General Courts-Martial. It *was an improvement* and *has* in a measure raised the standard and quality of military justice in the limited class of cases which *must* be passed on by a Board of Review. The "hidden fluke" is Article of War 50½. It is so worded that a very large per cent of the records of trial by General Courts-Martial are not reviewed by a Board of Review at all. For example, in the following types of cases, the sentence of a general court-martial can now legally be carried into execution by the General Officer appointing the Court, without the record of trial having been examined by a Board of Review, without the approval of The Judge Advocate General, without the approval of the Secretary of War, and without the approval of the President himself.

Type I.

Sentences against privates and noncommissioned officers if the General appointing the Court *suspends* the execution of the sentence at the same time he takes his final action. This is true even though such sentences involve the penalties of confinement in military barracks for a term of years or life, dishonorable discharge and forfeiture of all pay and allowances. Furthermore, the General taking such action can legally, on the following day or any day thereafter, issue an order revoking the suspension of the sentence and ordering it carried into execution, thus defeating all appellate review which was often done between the time of Pearl Harbor and V-J Day, because the great number of cases resulted in long delay before a record of trial could be examined by a Board of Review, more delay before the opinion of the Board of Review could be examined by The Judge Advocate General, more delay in transmitting "the record and the board's opinion, with his recommendation, directly to the Secretary of War for the action of the President," as required by Article of War 50½.

Type II.

Sentences against commissioned officers—All that is said in the preceding paragraph applies equally to cases involving commissioned officers of the grades of 1st and 2nd lieutenants, captain, Major, lieutenant colonel, and colonel, but does not apply to brigadier general or higher grades.

Type III.

Sentences against privates, noncommissioned officers, warrant officers, or commissioned officers below the grade of brigadier general, not involving death, dismissal, dishonorable discharge or confinement in a *penitentiary*. In other words, if sentences in these cases merely punish the soldier or officer by reprimand, fine, forfeiture of pay, restriction to camp or quarters, or limited confinement in a guardhouse, at hard labor, then the sentence can be carried into execution by the order of the General appointing the Court, without any appellate review whatsoever.

Under the provisions of HR 2575 as passed by the House, Article of War 50½ is repealed but the Act exempts from appellate review substantially all sentences of the types mentioned in I, II, and III above, but the Act seems to deprive the appointing General of the "trick power" to avoid appellate review by incorporating in his final action an order that the execution of the sentence be suspended, and then—the next day or later—ordering the suspension revoked and the sentence to be carried into execution.

The Act retains Boards of Review as now constituted and creates new super Boards of Review to be composed of three General Officers of The Judge Advocate General's Department. These are called "Judicial Councils." There is no more finality to the opinion of a Judicial Council then there is to that of a

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[*] Judge Advocate of the Third Service Command during World War II and an attorney of 35 years experience in civil life.

Board of Review. I am convinced that these Judicial Councils will contribute little, if anything, to the effort "to provide for more effective appellate review." It is probable that they will only serve to further complicate, confuse, and delay the existing system of *Appellate Review*. Furthermore, the members of these Judicial Councils cannot, in any true sense, function as judges. These Judicial Councils are to be constituted by The Judge Advocate as adjuncts of his office and can be abolished at his will. The members (although Generals) are appointed and removed at his pleasure. No action of a Judicial Council can become effective without approval of the Judge Advocate General, and a Judicial Council's findings of fact and conclusions of law are not legally valid unless concurred in by The Judge Advocate General.

Boards of Revew are mere adjuncts of the Office of The Judge Advocate General. As I recall, they were provided for by Congress shortly after World War I to meet the hue and cry that arose against the court-martial system at that time. The failure of Boards of Review to provide a "more effective appellate review" of convictions by general courts-martial is due to several fundamental causes, namely, (1) the members of such Boards are army officers "under the command" of The Judge Advocate General. Their appointment and removal are at the will of the individual who happens to be The Judge Advocate General. Their military ratings and their promotions are in the hands of The Judge Advocate General and, in most cases, their findings of fact as well as their findings of law, are merely advisory to The Judge Advocate General and the President. There is no finality to the action and decision of a Board of Review, and to make the action of a Board of Review final and authoritative requires further executive action by The Judge Advocate General, The Secretary of War (now, I believe, The Secretary of the Army), and, finally, in some cases, by the President himself. While hostilities were still on during World War II, the President's time was so occupied with other matters of national concern that it was physically impossible for him to properly consider and take final action upon the sentences by general courts-martial in thousands of cases of enlisted men, army officers, and even civilians who were subject to military law. Several times the President was in foreign lands conferring with the chief executives of our principal allies and, as a result, records of trial by general courts-martial piled up to the ceiling awaiting the return of our Chief Executive to the White House, and during all of this time American soldiers by the hundreds, and probably thousands, and American army officers were in confinement or under severe restrictions at a dead expense to the Federal government, having nothing to do except to brood over their disgrace of having been convicted by a general court-martial. In a very large per cent of these cases, the sentences by general courts-martial to dishonorable discharge, long terms of imprisonment, or death, were just and were finally approved or confirmed by the President, but in too many cases (even though they be few in number) the sentences were outrageous and regrettable miscarriages of justice. I know from actual experience that in most of these cases justice finally prevailed through our existing defective appellate review system.

The "Judicial Council" set up in HR 2575 is new but has most of the objections that exist in Boards of Review. In fact, I am inclined to believe that the creation of these "Judicial Councils" will further impair the effectiveness of appellate review.

In my thinking there is only one remedy for this evil, and it is relatively simple: The remedy is to amend HR 2575 by eliminating therefrom all provisions relating to "Judicial Councils" and all provisions requiring the President to approve or confirm sentences by general courts-martial (the President should have power to grant executive clemency as in civil cases), and abolish all Boards of Review, and then create an entirely new and separate tribunal in the nature of an "Armed Forces Supreme Court" and confer upon this Court full and final appellate jurisdiction in cases involving sentences by general courts-martial; and further empower this Supreme Court, for military cases, to adopt and promulgate rules of procedure governing the trials of cases by general courts-martial and make the decisions of this military Supreme Court absolutely final in such cases, regardless of whether such decision is to approve, modify, or reverse the action of the trial court. And, finally, make the duties and powers of The Judge Advocate General in military cases correspond with the duties and powers of The Attorney General in civil cases.

The members of the "Armed Forces Supreme Court" should be nominated by the President and confirmed by the Senate in the same manner as is now done in the cases of members of the Supreme Court of the United States.

Army officers in command of troops must have ample authority and power to enforce discipline and I see no objection to increasing such powers of a Commanding Officer but the authority and power to command troops for combat purposes is a wholly separate and distinct thing from a judicial procedure to determine the guilt or innocence of one of our own citizens who is charged with violation of a military or civil law, subjecting such citizen to the loss of his reputation, or his liberty or his life. All soldiers, whether privates, army officers or generals must be subject to command for purposes of combating the enemy. An army without the power in the officers to command and the corresponding duty of the soldier to obey ceases to be an army, and becomes a mob. On the other hand, a judicial body empowered to administer justice to the individual citizen charged with crime should not be under the domination or command of anyone, not even the President of the United States. A judge who is subject to command from any source is not a judge.

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Military Intelligence Training In The First Cavalry Division

by Major L. F. Clark, Jr.

INTRODUCTION

DURING the month of May 1947, the Commanding General of the 1st Cavalry Division and his staff found themselves confronted with a training problem of increasing complications. Since the 1st Cavalry Division first entered TOKYO on 8 September 1945, there has been a consistent and continuous loss of combat experienced personnel, including those who learned about Oriental Occupation duties the hard way during the first twenty-one months of the Division's duties on HONSHU. The Division commander, Major General William C. Chase, being an experienced G-2 himself, was well aware of the pressing need for properly trained men in this work and directed G-2 to form a Military Intelligence Training School for selected enlisted men at the Division headquarters.

SCOPE

The G-2 Section, upon considering the scope of instruction to be accomplished, drew up a plan for submission to the Chief of Staff; the object of the course being to train enough selected enlisted men to furnish each S-2 Section, down to and including squadrons, battalions, and separate troops, with at least one trained enlisted intelligence specialist in as short a time as possible. It was determined that a two and one-half week-course, staffed and conducted by members of the Division G-2 Section, would accomplish the mission. A plan was based on an eight-hour training day, five days a week, with a total of ninety-seven hours of instruction.

REFERENCES

For a general outline, the planners turned to the Intelligence Officers' Handbook published by the Command and General Staff School during the war. In answer to letters of inquiry dispatched to the Intelligence Division of the Ground General School, Fort Riley, Kansas and to Headquarters IX and I Corps of the Eighth Army in Japan, the section received an abundance of helpful publications to be used in formulating its program.

STUDENTS

To insure that the majority of the men selected were of a type to assimilate the instruction properly, the following criteria were laid down:

1. AGCT score of 100 or more.
2. At least one year to serve in the theater.
3. Contemplated or current employment in Intelligence work.
4. A desire to attend the course.

This selective process produced a high grade of students who approached their work with interest and enthusiasm, thus greatly simplifying the work of the instructors. All units of the Division having an organic or appointed S-2 Section were given an opportunity to send at least one man during the three sessions of the school. The Division prescribed that units not having an S-2 on Tables of Organization would appoint an acting intelligence officer so that separate troops and squadrons were included in this instruction.

COURSE OF STUDY

An effort was made to strike an equitable and profitable balance between tactical intelligence training and the highly specialized and often unrelated duties of the Occupation. It was felt that the tactical aspect of the training could well be based upon the references cited above, but that the specialized duties of the Occupation could only be covered from the experiences of the veteran personnel remaining with the units with the help of representatives of Military Government Teams and the Counter Intelligence Corps.

In the vast majority of subjects, a large volume of information was presented during a comparatively short instruction period, therefore heavy reliance was placed on the conference method of teaching supplemented by a liberal use of charts, training films, and other visual aids. The heaviest emphasis in time and detail of subject matter was placed upon Organization, Enemy Capabilities, and G-2 Records, which acquainted the men with the missions, organizations and duties of the intelligence sections and upon Elementary Map Reading, Observation and Patrolling, and Aerial Photo Reading. Since many of the students were from regimental I & R Platoons and the Division Reconnaissance Troop as well as Unit S-2 sections, it was found advisable to give very comprehensive and detailed instruction in map reading, and its allied subjects. The entire subject matter of FM's 21-25 and 21-26 was covered during this instruction. Experience proved that the intensive nature of the classroom work required a balance of physical outdoor application in order to prevent cramming and the resultant mental staleness. Practical field problems giving actual experience in subject matter taught were held at frequent intervals during which each individual was required to use his newly found knowledge on the ground without the aid of an instructor or a more experienced colleague. During the classroom instruction in these subjects, every effort was made to require each man to make immediate and physical use of the material just presented to him by the instructor. It was found that the frequent use of problems, a large majority of them being mathematical in nature, increasing in difficulty and scope as the class advanced, was an excellent means of promoting interest and holding attention. The interrelationship between the ground, the line map, and the aerial photo and photo map was stressed and illustrated from a practical point of view by the use of a single ground area for all three divisions of the subject. In order to apply this work as closely as possible to the Occupational duties, a thorough study of American and Japanese conventional signs and symbols using FM's 21-30 and 30-22 was given together with a selected list of Japanese words describing terrain features. The principles of observation and patrolling and the use of the compass were presented in conjunction with the advanced map reading course and given practical application during the map and field problems.

A short course in Order of Battle was presented in order to familarize the men with the terms, procedure and records used in this important part of G-2 work. Only a limited amount of time was spent on this course due to a pressing need for the allocation of more time for subjects more closely applicable to the units' Occupation duties. The principles of figuring time and space movement calculations were offered in a one-hour class lecture; however, a two-hour laboratory exercise devoted to working practical problems from maps of the local area was given during one of the map reading periods.

In order to emphasize the intelligence policies of the Division Commander, a one-hour conference, during which discussion was encouraged, was held during the first few days of instruction. The intelligence memoranda and annexes published by the Division were reviewed and discussed in detail in order to insure that the men had a thorough understanding not only of the Occupational mission of the Divisions, but also of the policies and methods prescribed for its execution. Every student was furnished with a copy of each Division intelligence publication and urged to form a personal file and to keep it up to date upon return to his unit.

Terrain studies and meteorological data with special reference to the local situation were covered in a two-hour period of which one hour was devoted to terrain sketching and the proper use of descriptive terms. Weather conditions characteristic of the island of HONSHU and their probable effects upon the Occupational mission were discussed in detail, and the students were furnished with the names, locations, and means of communication of the appropriate local weather stations.

A mimeographed extract of the more pertinent parts of Army Regulations 380-5, Safeguarding Military Information, was issued to each man and explained in detail during one class. Special emphasis was laid upon the proper handling of classified documents and the physical security of an S-2 office, every effort being made to make the discussion as practical as possible and directly applicable to the conditions existing in the Division units.

The group was given instruction and actual practice in writing clear and legible messages and the employment of all means of communication available in the Division Zone of Responsibility. This subject was also reviewed during the scouting and patrolling course. Bearing in mind that the conduct of a successful Occupation hinges directly upon the efficiency of control of the occupied people, two hours were devoted to a discussion of the psychology and customs of the Japanese people. This included a brief resume of the nation's history, its government, and social institutions, liberally illustrated with examples from the surrounding people and territory. The various religions, superstitions, and festival day observances with which the American soldier is apt to come into contact were described and their relative degree of importance to the Japanese people outlined. The prescribed methods of interrogation of prisoners of war and the provisions of the Geneva

An Oriental watches an orientation by two First Cavalry Intelligence School students.

Convention as it applies to them were covered with special emphasis upon the experiences of the war in the Pacific. The natural development of the Occupation Language Detachment from the combat prisoner of war interrogation team was explained and illustrated from the instructor's experiences.

Experience had shown that a close degree of cooperation between the tactical troops and the various other US Army agencies in the Division Zone of Responsibility and with the Japanese civil law enforcement agencies is a must for occupational success. In order to familiarize the students with the duties and organization of these units, the local Counter Intelligence Corps and Military Government commanders each sent a representative who gave a lecture on his branch's specialized duties. These officers emphasized the methods by which they and the Division units could achieve maximum cooperation with each other. Many common misconceptions were adjusted in this manner and the men were given the address of their particular local CIC unit and the best means of communication with them for use upon their return to their organizations. In addition to the discussion of his own section, the CIC representative mentioned the employment of the Japanese police as a source of information and outlined the best methods of using them. The Military Government officer stressed the objective of the Occupation and pointed out where the duties of the Division coincided with and where they were separate from those of the Military Government.

Since the unit Intelligence Officer in Regiments and Battalions is usually the unit Provost Marshal in addition to his other duties, the law enforcement aspect of the Occupation was stressed more than would be expected in the usual course in Military Intelligence. In addition to the lecture on the CID, a film from the Federal Bureau of Investigation, entitled "The Arrest and Search of Persons," was shown to outline approved methods of conducting raids and searches. The Division CID officer conducted an hour's instruction in the duties of the Criminal Investigation Division and stressed the main points in which they differ from those of the CIC.

The Division PIO gave a short talk on the local aspects of publicity and propaganda since the publicity work in line units is often handled by the S-2.

It was found that many of the graduates of the course were utilized by their units as instructors in the various subjects that they had studied. In order to prepare them properly for this sort of mission, a one-hour lecture was given covering the salient points in the preparation of an instruction period. This was followed by a three-hour practical exercise during which each student was required to present a five-minute period of instruction on any subject of his own choice. His talk was then criticized constructively by his classmates and the instructor. Experience has proved that this procedure contributed in some measure to the conquest of stage-fright by the junior noncommissioned officers.

EXAMINATIONS

All subjects were covered by examinations at some time during the course. These ranged in type from short oral quizzes to two-hour writs. Each subject had at least one written examination, the simplest of these being a ten-minute true and false type test. All examinations were graded and the grades averaged weekly at which time any man who had failed to make a satisfactory average was returned to his organization. Although every Saturday morning was set aside for examinations, spot quizzes were given in several subjects without warning at any time during the instruction. The student was rated solely on the results of these tests, no allowance being given for such intangibles as "attitude" or "adaptability."

INSTRUCTORS

The greater part of the instructors were drawn from the Division G-2 Section. The author, assistant G-2, was designated director of the school and charged with the responsibility of organizing and conducting the instruction and with the discipline and administration of the students. Each officer and several of the enlisted specialists of the section conducted one or more classes, The AC of S, G-2 opened each school session with an hour's introduction during which he explained the purpose of the instruction, welcomed the men, and outlined the scope of the school. General Chase maintained a lively personal interest in the intelligence students and their progress. He found time to address each group during its tour of duty at the school when he stressed the importance of their specialized mission not only to the Division but to the theater command. In addition to the officer instructors, the chief clerk of the section covered messages, communication, and the general routine of an S-2 Section. The section was fortunate in having two recent graduates of the Ground General School at Fort Riley; one from the photo interpreters course, and one from the order of battle course. These men were found to be well trained in their respective specialties and were utilized to the fullest extent. After a little practice in methods of instruction they were both found to be competent to conduct instruction in an excellent manner, although the majority of their students were older and higher ranking men. One junior NCO of the G-2 Section with a year of experience in the Occupation was detailed as assistant to the director. He was a licensed projector operator and well qualified in the use of maps and the compass. His duties were to see that all training aids were ready at the right time and place and in operating condition. In addition, he assisted in laying out the field problems, making up schedules and the other clerical work of the school. The 168th Language Detachment, serving with the Division, furnished an expert in things Japanese to hold the classes in POW Interrogation and the Customs of the Japanese People. As has been mentioned before, the Counter Intelligence Corps, Military Government, Criminal Investigation Division, and Public

Information Office each furnished a competent teacher for their respective specialities. The willing cooperation of these guest instructors contributed immeasurably to the success of the school.

Texts

Although the instructors were furnished a list of suggested references by the school, it was realized that the students would have access only to those issued them by the Section. The following list of field manuals was issued to each man together with a compass and straight edge for his use while at the school:

FM 21-5	Military Training
FM 21-25	Elementary Map Reading
FM 21-26	Advanced Map Reading
FM 21-30	Conventional Signs, Military Symbols, and Abbreviations
FM 30-5	Combat Intelligence
FM 30-15	Prisoner of War Interrogation
FM 30-25	Counter Intelligence Corps
FM 30-28	Censorship
FM 30-22	Foreign Signs and Symbols

One stereoscope was made available to every two men although these proved to be critical items to obtain. Necessary maps and aerial photographs were issued on the basis of one to each man and re-used for two succeeding classes with a small loss through fair wear and tear. Since they were encouraged to mark their maps in the field some loss was inevitable.

In several instances, either the appropriate Field Manuals were not available in the theater for issue in sufficient quantities to supply each student, or no suitable text had been compiled. In these cases, a sentence outline of the lecture or appropriate extracts taken directly from the Field Manual were mimeographed and issued to each man at the beginning of the instruction period for his reference. Copies of these improvised texts were made available to units desiring to conduct instruction in that particular subject.

At the close of each week's work, all students were issued a questionnaire for the purpose of making constructive criticism of the course. These papers were not signed so that adverse as well as favorable comments might be given freely. It was found that these student comments were of material benefit in making improvements both in the subject matter presented and in the improvement of the technique of the instructors concerned.

Administration

Realizing that ordinary barracks living conditions are not conducive to outside study, the Director, in coordination with the Director of the Division Central School, obtained well-lighted quarters for the students in one of the Central School billets. The men were organized into a squad under the supervision of the senior noncommissioned officer in the class, who was responsible to the School Director for the discipline and class attendance. Students were carried on temporary duty with the Division Headquarters Troop.

Conclusion

A brief graduation ceremony was held on the final day of each course during which each man who graduated as an honor student received his certificate of completion from General Chase personally and the remainder were given theirs by the AC of S, G-2, in the presence of as many of the instructors as were available at the time. This official evidence of the importance attached to the intelligence training in the Division was found to stimulate friendly competition throughout the entire course and provide an excellent incentive to extra study.

Results

A check showed that the vast majority of the successful graduates were assigned to intelligence duties upon their return to their respective organizations. A large percentage of these men were used not only as trained specialists, but as instructors, and more than three-fourths of the units sending men to the first two sessions of the school requested the allocation of future quotas. The request for additional quotas was found to be particularly significant because, at the time, heavy levies of manpower were being made upon all units of the Division. It is contemplated to offer this instruction again, probably in two consecutive sessions given every six months, in order to furnish trained replacements for the normal attrition caused by the return of men to the United States.

The results of this experience indicate that an NCO school in Military Intelligence is a practical and professionally profitable undertaking for a combat division on Occupation duty, and that the allocation of hours according to the following table is a workable method of accomplishing it.

Allocation of Hours for 1st Cavalry Division Military Intelligence School

Subject	*Hours*
1. Explanation and introduction to course	1
2. Organization, duties, and operation of the Intelligence units of the Division	1
3. Enemy Capabilities, EEI, and Intentions	3
4. G-2 records, files, collation, evaluation, interpretation, dissemination of military information	6
5. Elementary map reading	12
6. Observation and patrolling, advanced map reading	28
7. Aerial photo reading	10
8. Order of Battle	2
9. Time and space calculations	1
10. Division Intelligence publications	1
11. Terrain studies and meteorological data	2
12. AR 380-5 and security of an S-2 office	1
13. Means of communication and message writing	1
14. POW interrogation and Occupation Language Detachment	1
15. Psychology and customs of the Japanese	2
16. The CID, its organization and mission	1
17. Publicity and Propaganda	1
18. The CIC, its organization and mission	2
19. The Military Government, its organization and mission	1
20. Methods of instruction	4
21. Examination and review	12
22. Graduation	4
Total	97

Esperanto For The Tanker

by Lieutenant Colonel Karl L. Scherer*

AMERICANS being nonconformists and individualists, it is hardly surprising that the past war produced as many methods of engaging a target as there were units in a Branch, Branches in the Army, and Services in the Armed Forces. The local methods not only varied with one another, but also varied in fundamental points from the accepted training doctrine. In many instances the inspirations of the unit commanders were entirely adapted to their own locale and served well as a standard procedure within a unit. Actually, much gunnery training time was devoted to instructing the trainee in the unit's own terminology and procedure.

The fallacy of this course of action was clearly demonstrated when replacements were incorporated into the fighting team. Replacements had generally been trained "according to the book"; training centers and schools had little occasion or time to develop idiosyncrasies. The unlearning process, once the replacement arrived in his unit, was frequently considerable; and in that process the replacement lost confidence either in his previous training or in his new outfit.

The system of local ground rules completely broke down when employed in inter-unit, inter-Branch, or inter-Service firing problems. Everyone remembers the familiar cry, "Well, that ain't the way we done it in our old outfit." In combat as in training, tankers found that they were not using the same firing language as other tankers. They could talk to the infantry about targets, but it took a lot of time to get things squared away. Most tankers figured that the artillery was using some sort of double-talk, throwing in a liberal sprinkling of black magic to get on a target. From the tank hatch, it always looked as if the light bombers were usually just flying off into the far blue yonder when maybe they could have been lambasting an enemy battery, instead. As for naval fire in an assault landing, the tanker just took it for granted that their operations were top secret.

For the tank crew, this language barrier was mainly a source of irritation and a theme for griping: "How come those birds don't get the lead out and help us guys doin' all the fightin'? Why, they can't even talk straight, much less shoot straight." Tank company and battalion commanders were in a better position to evaluate the effects of the lack of inter-unit understanding. To them it meant lives, tanks, and missions when they didn't know where the next unit was shooting or how to request a supporting unit to shoot at something else. They are virtues in their place, but nonconformance and individualism have no place in gunnery when they serve to reduce the effectiveness of the fighting team.

With the increasing interdependence between the Armed Forces and between Branches of the Army; there must at least be a uniform vocabulary—an esperanto—for gunnery; and further, those principles and procedures common to all units, Branches, and Services must be standardized.

Standardization in gunnery vocabulary and its normal usage has been directed by two War Department circulars: Training Circular 6, "Common Procedure for Adjustment of Ground and Naval Gunfire," dated 13 June 1946, and Training Circular 11, "Standardized Fire Commands for Infantry Crew-Served Weapons," dated 18 November 1946. It is essential to train all soldiers who have occasion to fire weapons in this common and basic gunnery vocabulary.

Some of the terms are used only infrequently by tankers. The tanker should recognize these terms and understand what the user means by them. On the other hand, the tanker must have complete familiarity with the standard terms which he habitually uses. Direct fire is his field in gunnery, and he has to know it "cold."

It may seem odd that there should be two training circulars giving gunnery terminology. The difference between them is very simple—practically self-evident. It doesn't require any great experience in gunnery to realize that there are two basic firing situations which confront any individual attempting to place effective fire upon a target. Either the individual is in command of the firing unit and is thereby in a position to give fire commands, or else he has no command function over the firing unit and merely knows of a profitable target which he believes some firing unit ought to be able to destroy with his assistance. In the second situation, the individual makes a request for fire. This is the situation confronting the artillery forward observer; but, more important to the tanker, this is what confronts any tanker when the artillery forward observer becomes a casualty or is unavailable for any other reason.

Each of the two circulars applies to one of the two general firing situations. The vocabulary and usage for fire commands, for both direct and indirect fire, are given in Training Circular 11. It is this circular which guides and standardizes the basic training with crew-served weapons. Inasmuch as all soldiers receive basic training with at least one infantry crew-served weapon, all will be trained in one uniform direct fire terminology and one set of direct fire principles and procedures. In itself, this is quite a step toward standardization.

The vocabulary and usage for requests for fire are given in Training Circular 6. Training in the actual requests for fire, as given in Training Circular 6 (as distinguished from simply learning the vocabulary, which all tankers can and should perform), might well be limited in armored units to tank company commanders and above. In any case, the vocabulary laid down in the two circulars is uniform.

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The sequence in which this uniform vocabulary is used is not at present the same for the two firing situations: fire commands and requests for fire. Conceivably, even the sequence might be standardized; but disregarding this possibility, very considerable benefits will have accrued from the simple step of issuing the two circulars. One tanker talks the same language as the next tanker; tanker replacements use this same language in the same way as do all other tank units; and every tanker can understand what the infantry, artillery, air, or navy is doing in a firing situation.

While Training Circular 11 standardizes fire commands specifically for infantry crew-served weapons, it actually applies equally to tank weapons. The circular was prepared in collaboration with armored officers and follows the pattern of tank gunnery exactly. The vocabulary, the usage, and the sequence of direct fire commands are those which have been accepted for some time as standard for tank gunnery. All tankers can and should use this circular as their gunnery bible, whether commanding the fire of their own individual tanks or of their own tank battalions.

It cannot be assumed that standardization of language and usage is the cure-all for all gunnery problems. The two War Department circulars do not attempt to give the actual steps by which the individual gunner, or weapons crew, manipulates the weapon. Manipulative steps vary with each weapon. They are laid down generally in the appropriate field manuals. As a matter of fact, it is not feasible or necessary to train every soldier to fire every weapon, although there doubtless are advocates of this utopian standardization project. Standardization, at present, does not pretend to make a 155mm section chief out of a 76mm tank commander; however, it will permit one to understand the other. But further than just mutual understanding, any good uniform gunnery procedure should enable one individual to at least use the fire of any other weapon, even if he cannot actually fire that weapon.

The basic training which all soldiers will receive in the principles and procedures of direct fire infantry crew-served weapons will enable them to give uniform and correct fire commands. On the other hand, when the 76mm tank commander needs the fire of the 155-mm gun, he must know more than the vocabulary and procedures for his own weapon and the vocabulary for the adjustment of gunfire, as given in Training Circular 6. He must understand the procedure for shifting fires, and he does not receive this in his basic training. Furthermore, he cannot find it in Training Circular 6.

For many tankers and for many soldiers, Training Circular 6 in its present form is inadequate. If the procedure for adjusting gunfire is to be standardized, at least one procedure should be laid down; one simple and adequate series of steps given. Such a uniform procedure governing the adjustment of all ground and naval gunfire must be general, applicable in all situations; and it should not be limited to a training manual of any one branch of the Army. A common procedure for adjustment of fires would of necessity include an explanation of this basic consideration in adjusting fires: that rounds can be most clearly sensed in relation to the target, and most accurately shifted onto the target, when they appear to be along the observer-target line. Initially, the problem is to obtain a round on that line; once on it, you make subsequent corrections so as to remain on it while bracketing the target. It should also be explained that in certain positions of the guns in relation to the observer, a deflection change in the line of fire may result in an apparent range change as the round is observed along the observer-target line, and a range change in the line of fire may result in a deflection change. For example, if the observer is well to the right of the guns, an increase in range will make the next round appear farther to the right while a decrease will make it appear farther to the left. Any simple, uniform, procedure for adjusting fire will give substantially these steps:

(1) Visualize the line of fire and the effect of deflection and range shifts upon that line.

(2) Visualize a yardstick, in hundreds of yards, in the target area.

(3) The previous two steps must be repeated with each round fired in adjustment. Ranging rounds may be requested to assist in accomplishing these steps. Ranging rounds consist of two rounds fired in rapid succession by one gun, the first round where you designate and the second at a 400-yard greater range. Unless you specifically request further ranging rounds, this method of fire is discontinued after the first two rounds.

(4) Now, in order to move the next round onto the observer-target line, use the first of the two ranging rounds as a basis for your shift. Determine whether a shift in range or in deflection at the guns will more clearly and certainly place the next round on the observer-target line and nearer the target. Estimate the amount of this single shift and transmit it to the firing unit. Shift one element at a time only, in this step, until a round can be clearly sensed on or near the observer-target line.

(5) Once on the observer-target line, the problem of keeping subsequent rounds on that line, while decreasing the size of the bracket, is a simple matter when your position is near the line of fire. However, when the guns are appreciably to your flank you must shift the deflection at the same time that you shift the range, or vice versa, depending upon your position. There are accurate means of computing these shifts. However, the following steps will give you satisfactory approximations: (a) select that shift, deflection or range, which will cause the succeeding round clearly to bracket

the target and estimate the amount of the shift; (b) estimate the amount and direction of shift necessary in the other element in order to keep the round on the observer-target line, and (c) transmit both of these shifts to the firing unit.

(6) If, in the course of the adjustment, you obtain a round so far off the observer-target line that you cannot sense it clearly, repeat step (4). When on the observer-target line, repeat step (5) until one round has effect on the target. Then request FIRE FOR EFFECT.

These are the only procedural steps which Training Circular 6 needs to make of it a real common procedure for adjustment of ground and naval gunfire. Their inclusion may appear superfluous, oversimplified, or misleading to the artilleryman. To the tanker, they may appear complicated until he has tried them. Without them the average tanker, trained only in direct fire, is lost in adjusting observed fires. In actual practice, although it would be desirable for all tankers to know this procedure in case of need, it is really only the tank company and battalion commanders and their staffs who need to know how to request and to adjust fires of another unit. This knowledge is invaluable to the tank unit in combat, since it serves to increase the power of the tank attack out of all proportion to the time necessary to acquire the knowledge.

The standard vocabulary and usage for fire commands and requests for fire, together with a standard procedure for adjusting observed fires, will go a long way toward solving the principal problems presented by individualism in gunnery. Replacement training and unit training will be simplified, made more effective and more lasting. Lack of understanding and misunderstanding in firing situations involving various units, branches, and services should become practically nonexistent. And as far as the tanker is concerned, it means one whale of a lot more fire power and oomph backing him up in all his combat operations.

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State Rating Boards Authorized For National Guard Liaison Pilots

The Adjutants General of all States having Air National Guard units have been authorized to appoint aeronautical rating boards to examine applicants for the rating of liaison pilot.

The creation of these boards should make it considerably easier for former Army Air Force pilots to qualify as liaison pilots in the light aviation program of the new National Guard.

The State boards, which also will conduct flight tests, will consist of members from the Air National Guard units of each State.

Former Navy and Marine Air Force pilots must appear before a United States Air Force board prior to going before the State boards. Non-flying applicants may qualify by taking an eight-month course which includes five and one-half months at the U. S. Air Force Liaison Pilot School at San Marcos, Texas, and two and one-half months of operational training at the Army Ground Force Pilot School, Fort Sill, Oklahoma.

Ex-AGF liaison pilots can be commissioned in the Guard by having their rating card re-validated by the Chief of the National Guard Bureau and by meeting the usual requirements for Federal recognition.

Successful applicants will be commissioned in grades from First Lieutenant to Lieutenant Colonel, according to Table of Organization vacancies, and will be authorized up to 100 hours flying time a year in the new L-17 and L-16 planes.

National Guard liaison pilots receive the same flight and base pay for actual duty as do regular Army liaison pilots.

Delivery has been completed to the States on 47 L-17s, the new four-seated Navion, and 376 L-16s, the new two-seated Aeroncas.

At the present time there are 750 liaison pilot vacancies, of which only 231 are filled. When organization of the new National Guard is complete, there will be a total of 1,250 vacancies, and planes will be assigned to Army (ground) units of the National Guard on an equitable percentage basis.

Recently 60 Army Ground Force liaison pilots were assigned to the National Guard to assist the Senior Ground Instructors in the establishment of ground light aviation schools in each State authorized five or more liaison type aircraft. These schools will give operational training to former Air Force pilots who qualify as liaison pilots.

The AGF pilot advisers also assist the Senior Ground Instructors in matters of supply, maintenance, technical inspections and the screening of personnel.

The National Guard's liaison plane program offers full-time jobs, in addition to Guard service, for qualified mechanics and pilots.

National Guard liaison aircraft will also be made available to liaison pilots assigned to ground units of the Organized Reserve in order to insure the fullest utilization of aircraft.

Those interested in obtaining commissions as National Guard liaison pilots or becoming permanent caretakers should apply to The Adjutant General of the State in which they reside. The Adjutant General's Office is located at the State capital.

This Was The Cavalry

CARDED

by Frederick Wilkins

The Sixtieth Anniversary of the Armored Cavalry Journal offers an appropriate moment to present this fine review of our mounted arm and its transition in modern warfare.

CALL the roll of the regiments. . . .

Say again the great names; list the battle honors; recall the famous mounts and be proud; for the sunlight falls dim on saber edge and polished harness; the bugle softly blows. The Army Boards are through now, their reports in, and the critics of the horse have had the last word: no more horse cavalry. There's plenty of armor—but no horses.

They've been getting around to it for a long time: ever since the tank came in military men have been saying the horse was on the way out, that cavalry was an obsolete Arm. This time they have made it stick—for a time. While there is sadness in the passing of something fine, of machines shoving aside the beautiful mounts, there is no shame, for the machine falls heir to a great name, and the wearers of the crossed sabers can look back on proud names, great deeds. . . .

During the first few years of our national existence cavalrymen had a pretty rough time. We fell heir to no mounted tradition, for British pluck and steadiness were manifest in Grenadier and Infantry of the Line, not a lot of men riding about on horses. Frederick had shown the value of horsemanship and the saber charge; the Austrians had proven the necessity of cavalry for reconnaissance, but the British and Colonials fought a long war almost entirely afoot. Cavalry is a costly service, and the colonists had little enough of that necessity of life, money. There were some small unit actions and fine leaders in the southern campaigns—"Light Horse Harry" Lee and Marion made names that have lasted to this day, but there were no great mounted contests. Washington decided on a reliable infantry, and his drill master, Steuben, concentrated on this Arm; his famous *Regulations* have almost no mention of cavalry, little of artillery.

Well, somehow we managed to win through. Today, in the business of being the greatest and richest nation, we forget that at one time we were one of several small and insignificant peoples. Whether rebel Colonials or Republican United States it was expensive to maintain an Army, especially a force strong in horses and cannon. The first years of the new Republic saw an Army of infantry regiments and a few guns.

By an Act of Congress, March 5, 1792, the first mounted unit in our national history was established. There was a major Indian problem at hand; France was a possible enemy; England not inclined to take independence seriously; but primarily, the Indian menace brought into being the new squadron. The unit was commanded by a major, and each of the four troops had a captain, a lieutenant, a Coronet, six sergeants, six corporals, one farrier, a saddler and sixty-five Dragoons. There must have been considerable discussion regarding wages, for the scale adopted could not have been chosen without considerable downward revision: the major received fifty-five dollars a month, and so down the line to three dollars for the privates!

Men were enlisted for three years. This was the first Regular Cavalry unit; despite almost impossible recruiting odds and the lack of care which has always distinguished the American people in times of peace, the squadron was enlisted, equipped and trained. The men had beautiful brass helmets and horsehair plumes, the only helmeted force in our Army. The Dragoons were with Wayne at Fallen Timbers and served gallantly in that battle, as in many less famous frontier skirmishes. Their period of service was brief, but no finer body of American troops have ever worn the uniform than the men of the first squadron. They were Regulars in the finest sense of the word.

In 1802 a grateful nation showed its appreciation by disbanding the squadron. For one thing we were broke, and what money we had was being spent on naval construction and the war with the Barbary pirates. During the following years we didn't quite know what we wanted, or needed. By 1808 some people thought we should have *some* cavalry, and a Light Dragoon regiment was ordered organized, but they had to serve as light infantry until enough money was available to buy horses. So, we had cavalry of a sort when the second English war came along. British cavalry was little better than it had been in 1775, and ours was worse. As far as mounted combat went 1812-1815 was a barren war. It is interesting to think what service could have been made of the superb units of the old Dragoons.

Very likely their main use would have been that of other cavalry units—in 1815, at the end of the war, an economy wave washed out everything in the Army except a few infantry and artillery regiments. For the next few years the Army managed without the mounted man. The years from the War of 1812 to the outbreak of the Black Hawk War were about as dreary as the Army ever endured. Such activity as there was was almost entirely devoted to sea and river improvements and to border fortification. An obscure lieutenant named R. E. Lee was engaged in some of this work and kept right on superintending the building of forts when the Indian trouble flared into the campaign know as the Black Hawk War.

It is recorded that a certain Abraham Lincoln raised a militia company and was sworn in as a captain by a Regular lieutenant named Jefferson Davis. Quite a considerable force was engaged before the trouble was done, and it was plainly shown that any Indian campaign required horsemen. A battalion of Mountain Rangers was recruited, but the idea of Regulars acting as partisan troops didn't jell; for one thing the choice of a commander was poor.

Finally, on March 2, 1833, the American Cavalry Service was born, for the Arm and the unit created were in service until the Army reorganization following World War II. The Regiment, the First Dragoons, was somewhat similar to the first squadron, but larger, having ten companies. The grade of Coronet was abolished for mounted units and Second Lieutenant substituted. Pay was increased to six dollars for private soldiers. Henry Dodge was the first Colonel, with Stephen Kearney as Lieutenant Colonel; Jeff Davis was a Lieutenant, and Adjutant of the Regiment for two years.

Immediately the First Dragoons began those long plains marches that were to be the stock in trade of mounted regiments. Already we were straining against the boundaries of the Louisiana Purchase; there were vast lands—providing the Indians were reasonable—for the taking. Almost before it was a regiment, the First was on the march, overawing the Indians. In their first months the Dragoons covered hundreds of miles in all kinds of weather, lost over a hundred men by sickness and exposure, but had a most calming effect on the natives west of the great river.

In May, 1836, another regiment of Dragoons was raised. This unit went to Florida and fought through the long Seminole campaign, while the First stayed on the Plains. During this period and through the Mexican War the men of the Dragoons wore a dark blue fatigue jacket trimmed in yellow lace; their trousers were sky blue with reinforced seats and a double yellow stripe up the leg; a flat topped forage cap was worn, also trimmed with a wide yellow band. Officers wore a silk sash of orange hue, while noncommissioned officers had yellow worsted sashes. There was a snappy dress uniform, but very seldom did the Dragoons find time for anything but field clothing.

For our third war we entered battle with a fine cavalry force, which was a good thing, as the Mexican theater was ideally suited to mounted action, the Mexicans skilled horsemen. The Mexican War and the following Indian wars would do much to develop the type of mounted action that would be the characteristic form of combat for American cavalrymen in the years to follow.

This is the story of the mounted units of the Regular Army, but that story is largely told in relation to the men they served with and against; one of the influences was the volunteer regiments of Texas Rangers. There were other volunteer cavalry units, but the Rangers had a special flavor that has never been equalled: their ability in getting into trouble was exceeded only by their skill in getting out; their marvelous combat record was exceeded only by their horrible showing as garrison troops, and their natural dash was well combined with an imposing array of firearms. The Rangers were the first military unit to employ the new Colt Revolvers and brought mounted fire action to cavalry combat, a lesson that they had learned in their Indian battles.

From the Rangers the Regulars learned to combine partisan dash with cavalry steadiness; they saw the value and necessity for revolvers and firing from horseback; a Ranger used a horse as a means of locomotion and could fight as well dismounted as when in the saddle. This lesson of lightness and dash was further emphasized in combat with the Mexicans, who charged as lancers in regular formation and acted as guerrillas in the brush.

These guerrilla actions cost many lives and began the war in an unfavorable light, when an American detachment of the Second Dragoons was cut off and forced to surrender. This did nothing to add to the reputation of the Regulars, but their day was at hand. Taylor didn't care too much for the Texans but used them for reconnaissance and security; the Dragoons were held back for battlefield employment.

They showed what they could do at Resaca de la Palma. Captain May and a squadron of the Second Dragoons made one of the celebrated charges in cavalry history and had a large part in deciding the final outcome. Taylor's men had been taking a pounding from a Mexican battery sited across a ravine in a most commanding spot. May and his Dragoons were ordered to clean out the position. Following a covering fire from friendly guns, May led his men in a saber charge that overran the enemy cannon and engaged in a wild melee in the enemy lines, throwing a section into confusion and taking pressure off the attacking Americans. They fought back and forth, taking the Mexican commander prisoner before fighting their way clear and riding back to their own lines.

From that day the prestige of the Dragoons was secure. Their following service, while offering no equal opportunities, was more than good. In the meantime a Regiment of Mounted Rifles was raised; unfortunately all their mounts were lost in the Gulf of Mexico, and they served out the war as infantry. The First Dragoons had no chances for combat, but they performed prodigious marching feats, crossing overland to New Mexico; parts of the regiment went on to California with Kearney, assisting in the conquest of that territory by a mixed Army and Naval force.

Due to the experiences of the Mexican War revolvers were issued in some quantity to the Dragoons, the famous Colt "dragoons" of 1848. The spoils of war ranged from Texas to the Pacific—wonderful cavalry country, all Indian country. The rides the Dragoons and Rifles made in the next few years would fill volumes: there was Oregon; there was extensive mapping in the Western Plains, explorations in the Rockies. There were a thousand and one Indian fights.

And there was a crying need for more horsemen!

A one-time cavalryman, Jefferson Davis, was Secretary of War, the same who had been adjutant of the First Dragoons. There was no need to sell him on the idea of horsemen; he pushed through the creation of two new mounted regiments, the First and Second Cavalry, in 1855. The law was such that he was able to establish two *Cavalry* regiments without regard for the seniority of the Dragoons and Mounted Rifles, a fact that caused much ill will and the later claim that he filled the new positions with Southern officers. Whatever the story we now had Dragoons, Mounted Infantry and Cavalry, in the best European style, though the actual distinction was largely one of name.

A dragoon was supposedly a horseman who could fight afoot if necessary; a Mounted Infantryman fought only afoot, while a Cavalryman was only to engage in combat while mounted. Actually all of them fought afoot or dismounted. Dragoons were generally armed with pistol-carbines, sabers and musketoons, or carbines. The Mounted Rifles had no sabers and generally fought dismounted; however, they could fight mounted, as they had the heavy Colt Dragoon revolvers, as well as percussion rifles. Cavalry regiments used the Colt "Navy" revolver, sabers and carbines.

The uniform was basically the same, though the trimming varied with the regiment: Dragoons wore orange; the Riflemen green, while Cavalry regiments had yellow. As an additional glory the Dragoons and Rifles had the "Albert hat," a gaudy affair with green and orange pompoms. In this period, Captain McClellan invented the saddle that was to bear his name and remain in service as long as the cavalryman himself.

The two new regiments had a hard life ahead of them, and fine men were chosen to lead them. Their officer rolls read like a roster of Civil War generals. Lee was Lieutenant Colonel of the Second Cavalry, the most famous of the officers, but there were others who were better known at the time; few of the lieutenants failed to wear stars in the struggle ahead. It is doubtful if two regiments in any Army ever contributed so many general officers as the First and Second Cavalry.

This was all something in the future when the regiments were formed; other than the usual wishing of a junior officer it is doubtful if anyone gave any thought to what was ahead. The Second Cavalry left Jefferson Barracks late in October and marched to a new station in Texas. Seven hundred and fifty strong they moved through the very heart of the Indian Territory in an impressive display of power that was not lost on the red man. In the next five years cavalrymen would fight Cortinas along the Mexican border, wage a desperate winter campaign against the Mormons, fight Indians in New Mexico, Texas and Oregon, plus the thousands of miles of patrolling and mapping that was classed as routine.

A typical incident happened along the Snake River in 1858, when three companies of the Dragoons and a company of the Ninth Infantry were almost destroyed by Indians. A column came to avenge the defeat and rode for *twenty-eight* days before running the Indians to earth at Four Lakes. This fight proved again that the revolver and carbine were the weapons for the West; the saber began to play a smaller and smaller role. European distinctions between heavy and light cavalry, cavalry and dragoons had no meaning at all on the Plains.

There were other duties for the cavalryman. The deserts and semi-arid Southwest suggested to certain military minds the use of camels as a means of mounting our forces in the desert. A cavalry company at Campe Verde, Texas, was selected as the unit to test the American Camel Corps; a string of camels was assigned to the unhappy troopers. Knowing nothing about handling, packing or riding camels, the men made somewhat less than a glorious success out of the experiment. Contemporary accounts say that the animals had wonderful possibilities if properly handled, but the animals were turned out.

There was too much brewing for men to worry about a few camels; the Civil War was in the making and officers and men began to take sides: the mounted regiments went about like the rest of the Army, with the bulk of the enlisted men staying with the colors and the officers splitting north and south. The Second Cavalry—what was left—marched through Texas to the Gulf and sailed for New York. The other regiments assembled in the north and began rebuilding, trying to find new officers.

A new regiment, the Third Cavalry, was organized, but other than this little attention was paid the Regular cavalry. Cameron, Secretary of War, didn't believe that mounted men could operate in the East and wouldn't activate any more units, refusing the offer of many volunteer regiments from the states. Despite his poor management and judgment many regiments were mustered into service. For some time, however, the Union forces were almost without mounted units. Bull Run was fought with a handful of men from the Second Cavalry; these, along with Syke's battalion of Regular Infantry, were the only troops to stand firm when the disaster came and the famous run from the battlefield began.

In August, 1861, all mounted regiments were reorganized and designated cavalry. The First and Second Dragoons became the First and Second Cavalry; the Mounted Rifles became the Third Cavalry; the First and Second were now the Fourth and Fifth; the new Third was renumbered the Sixth Cavalry; all these designations held until the present. During the war six colored cavalry regiments were raised, as well as over two hundred volunteer regiments.

Search the pages of history and you will find no finer horsemen than the cavalrymen of the American Civil War. The distinctive character of the American cavalryman was fully developed during the Rebellion; while it never befell the lot of the cavalryman to engage in mounted combat against a civilized foe after this struggle, there is no doubt that the local boys would have given a fine account of themselves.

In the beginning the Rebels had a great advantage: cavalry is an arm that requires superb leadership, both on a unit level and from the high command, and the Rebs had a great initial advantage in command. They also had better mounts and men better trained for mounted action. While the Regular regiments were all in Northern service, they were spread pretty thin in training and organizing the scores of volunteer units. Under Stuart and Forrest, the young Lees and many more the Confederate regiments performed remarkable feats of marching and battle. Stuart's famous march around the Union Army is the best known example, but there were others.

Both sides imported foreign cavalry experts, but their influence wasn't lasting. It is little known that each side established lancer units, and these forces even engaged in combat on a limited scale, but the weapon was foreign to American hands; men who preferred the revolver to the saber couldn't see any advantage in the lance.

Tactics were undergoing a constant change. Southern units had started the war as firm believers in mounted fire actions; according to European standards they were really mounted infantry, not cavalry. Most Europeans, especially the Prussians, took a slighting view of the Civil War and looked down their noses at our cavalry, but they never had to engage in combat with them. Both sides employed the revolver more and more. In 1863 Stuart tried to stop this habit and told his men to employ the saber in the charge, using the revolver only when dismounted, or when the enemy was behind an obstacle.

It takes much practice to make a good swordsman, more for a lancer, and firearms, especially in a melee, are not too effective. A small action in 1864 illustrates this fact in the pointed way war brings out such lessons. A hundred Federal troops armed with sabers and carbines ran into about the same number of Mosby's partisans armed only with revolvers. One Rebel was killed, but twenty-four Union troopers were slain, twelve wounded and over sixty captured. When men could do this with a revolver they weren't about to draw a saber.

It wasn't until 1863 that Federal cavalry began to make a show. That year the Cavalry Corps of the Army of the Potomac surprised the great Stuart at Brandy Station and fought him hammer and tongs. While they were finally driven from the field the Union troopers found the confidence in themselves and their leaders that had been lacking. From then on the Southern leaders had to count the Union horsemen in every battle; no longer would Stuart have his own way.

It was Union cavalry under Buford that dismounted in a critical moment at Gettysburg and helped save the day. Rebel cavalry often fought afoot, for the use of the new breech-loading carbines made cavalry effective when dismounted. Leadership on both sides discovered more and more about cavalry combat, and the size of the units grew, first to divisions, then to corps.

When Grant took over command of the Union Armies he appointed Sheridan as commander of the cavalry, and the end was in sight, By now the largest bulk of the mounted men were well trained and had a commander who was a skilled cavalryman *and* a general. Their horses were fresh, their numbers limitless, their equipment far better than the Rebels. At one time the Federals had to fear the fast moving clouds of dust that meant Stuart's cavalry; now the blue-coated columns circled the ragged, tired remnants of a proud army that moved slowly southward from Richmond. It was the ceaseless hammering of Sheridan's horsemen that finally closed the war and cut Lee from all hope. And it was a determined Sheridan and a cocky kid general named Custer who demanded the surrender of what was left of the Southern forces, but that went otherwise and the cavalryman didn't have the honor of taking the final surrender.

The volunteer regiments raised during the war went back to their several states and became the basis for later National Guard units. Regular regiments went South, then West, and started fighting Indians, building railroads, mapping and exploring, about where they had left off in 1861. It would be a long, dreary time before the Army rose again. By law the force could not exceed 25,000 men, and there were times when little over half that number were on the rolls; there were times when no money was at hand for pay, and there were any number of times when there were 300,000 Indians on the Plains.

All the men in the Indian fighting Army gave a great account of themselves, but due to the nature of the ground most of the burden fell on the yellow legs. In 1868, Custer, leading a new regiment, the Seventh Cavalry, made an epic winter march and won a victory over the Indians at Black Kettle. It was Custer and a large part of the Seventh Cavalry that took part in the most famous Indian fight of the West eight years later at Little Big Horn. Not a single man lived through the fight—in fact the only living survivor of the companies with Custer was a horse.

An impossible situation had been handed the Army. Portions of the Third Cavalry engaged in another winter campaign in 1868 and broke another tribe—for a time—but 1,200 horsemen and 1,400 infantry can't cow 300,000 people.

The Second Cavalry fought in Montana; the First, Third and Fifth fought in Arizona and supposedly had the Apaches cowed; the Sixth campaigned along the Red River; there were troubles in Texas and along the Rio Grande. From 1869 to 1875 there were two hundred and three separate engagements, most of them involving cavalry. The big Sioux wars of '76 saw the Seventh, Third, Second and Fifth regiments in action.

But it was again in Arizona that the cavalryman had his hardest time; of all the tribes fought the Apache was the toughest, had the roughest terrain for a battlefield and the advantage of skipping across the border when close-pressed. It became necessary to engage friendly Indians to combat the renegade tribes, and we had our first native cavalry. This worked well in Arizona, but efforts to raise Indian regulars elsewhere failed completely. A number joined the cavalry, but absolutely refused to have anything to do with infantry or artillery. They couldn't stand the discipline of Army life and deserted.

But in Arizona they were able to dress as they pleased, had a few famous scouts to lead them and played a major share in cleaning up the Apache trouble and running Geronimo to earth. The Indian troubles gradually ended, basically because the frontier was pinched out between the advancing railways, telegraph, and the spread of rancher and farmer.

In the 1880's the Army began changing, expanding, thinking of warfare in terms of European foes. In 1883 Cook's new cavalry regulations were adopted; for the first time the designation "troop" was officially used. They still had the saber, but the revolver and carbine were the weapons that decided battles. Though small, the regiments were the equal of anything in the world.

When war with Spain became a reality the bulk of our cavalry regiments went to Cuba, but they went as infantry; only a few horses were taken with each unit. The mounted regiments were formed into a separate division of three thousand men and fought at Kettle Hill, or San Juan, as it is now known. Just as would their grandchildren they struggled through tall grass, between trees, fought fever and snipers. When the impetuous volunteers of the Rough Riders got in a tight spot it was a colored regiment of Regular cavalry that came along and helped them out. Cuba proved the adaptability of American cavalry.

World War I came along, but the story was a bit different. Despite popular belief cavalry actions in that war fill a thick book, but they are not American actions. Our mounted regiments patrolled the border, where they saw plenty of action, or waited in the Islands, but there was no action in France.

Intervals between World Wars saw a swing from position warfare: cavalry had never been whipped—it was merely waiting for the breakthrough. Military men were going to show what the horse could do. In the meantime the tank was being perfected; the airplane became a deadly weapon; the gasoline engine became the means of movement; strange new phrases like lightning war and armored force and mechanized armies became popular.

The cavalryman tried to keep abreast. He added motorcycles and more machine guns, scout cars and mortars; armor was introduced and mounts were carried in large trailers. Part of the old regiments were converted to armor in the Seventh Brigade, Mechanized, the origin of our Armored Force. It looked like we had a correct answer: we had a nice blend of horse and machine, something for every terrain.

In the Louisiana maneuvers of those long ago prewar years the famous First Cavalry Division made a wide flanking march and captured a gasoline dump, left an armored division mired for lack of fuel. Military men said "see there" and recalled the days of Stuart. But that was about the end—the horse didn't quite make it. The formal close-out came with the action of the 26th Cavalry Philippine Scouts. Other horse actions in the war were of a provisional nature insofar as concerned the U.S. Army. The First Cavalry Division went to the Pacific Theater as a dismounted unit to acquit itself with distinction.

The Second Cavalry Division went out of business in Africa in early 1944, remolded into service elements with the bulk of its officers detailed and assigned in infantry.

The cavalry had undergone logical progression into mechanization and armor. Events proved the soundness of the decision to dismount or disband our mounted forces. What will happen tomorrow is a guess, but today the standards are furled; the blare of the bugle is drowned in the roar of engines and the clanking of tank tracks. But the story is still there in the battle honors and in the hearts of men.

The Military Stakes

by Colonel Hamilton H. Howze*

ON 25 and 26 November, 1947, the Military Stakes Competition was instituted at The Ground General School. On those two dates, the members of the Officers' Basic Class competed. As a result of the success of this competition, it was decided that the same test (with modifications only to prevent the future competitor from taking advantage of information he may have gained from a description of a previous competition) should be given to each army officer candidate class at The Ground General School. Accordingly, Army Officer Candidate Class No. 15 competed on 12 December.

The Military Stakes is the modern successor to the Standard Stakes, a tradition of The Cavalry School at Fort Riley for nearly 25 years. Before the war, the Standard Stakes was primarily a mounted competition, requiring the contestant, riding a succession of horses, to negotiate a course of jumps, to take a cross-country course, to run a mounted saber course, and to carry a polo ball (in the usual manner with a polo stick—not in his pocket) for the length of a polo field, all in a wild race against his competitors. Additionally, each officer had to demonstrate his marksmanship with rifle and pistol, and his ability at foot-racing. The old Standard Stakes required each contestant to produce a dollar bill as his entry fee and the "stakes" were run winner-take-all.

The present-day Military Stakes derives its general theme—a race with a series of tasks to be performed during the course of it—from the old Standard Stakes. A maximum of 25 contestants can be handled on the Military Stakes Course in one heat; for the Officers' Basic Course, a total of eight heats were run, and for AOC 15, two heats. Trophies were presented to the winner of each heat, and for the Basic class, to the over-all winner.

The course is about two miles in length, and contains 33 stations, as indicated by Figure 1. Since it is the purpose of this article to be definitive, each of these 33 stations is described in brief herewith.

No. 1—Contestant must negotiate a vertical concrete wall about 6 feet high. Maximum score—10.

No. 2—Contestant, given a map of Fort Riley and vicinity, is required to orient it by observation of terrain features in the vicinity. Maximum score—15.

No. 3—Contestant finds a carbine disassembled; he must assemble it, put it in firing order, and break a balloon 100 yards distant. Fifteen rounds tracer allowed. Maximum score—30.

No. 4—Contestant must identify a military combat aircraft flying overhead, and determine its altitude. Maximum score—20.

No. 5—Contestant must locate North on an aerial vertical photograph, basing his judgment on shadows. Maximum score—15.

No. 6—Contestant finds a rifle disassembled; he must assemble it, put it in firing order, and break a balloon 200 yards distant. Sixteen rounds tracer allowed. Maximum score—35.

No. 7—Contestant finds a light machine gun disassembled; he must assemble it, put it in firing order, and break a balloon 300 yards distant. One hundred rounds tracer allowed. Maximum score—35.

Assemble the light machine gun.

Fire at the balloon numbered to correspond to your number until balloon is hit or ammunition is expended.

No. 8—Contestant, confronted with a stack of basic military supplies (clothing, rations, ammunition, lubricating oils, engineer supplies, etc.) must place these supplies at stakes which indicate classification, I, II, III, IV, or V. Maximum score—20.

No. 9—Contestant is confronted with a ¼-ton truck not in running order; he is required to put it in order and drive it twenty feet, over a white line. This station tests automotive trouble-shooting ability, plus an understanding of driving technique. Maximum score—35.

No. 10—Contestant is required to lay an aiming circle on Magnetic North. Maximum score—20.

No. 11—Contestant must identify, on a sky chart, the North Star. Maximum score—15.

No. 12—Contestant must carry a 60mm mortar over a 15-foot bank, and lay it, according to certain data, on an aiming stake. Maximum score—20.

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*Executive Officer, Academic Branch, The Ground General School.

Carry the mortar to the far side of the embankment.

Set up the mortar at your spot marker on the taped line; lay the mortar, using any one of the aiming stakes in front of the line, for Deflection Left 20, Range 800 yards.

No. 13—Contestant selects, from a number of pieces of equipment, those items necessary to carry on an engineer road reconnaissance. Maximum score—20.

No. 14—Contestant, provided with a compass, determines which of four arrows points at a designated magnetic azimuth. Maximum score—20.

No. 15—Contestant assembles, but does not fire, a pistol. Maximum score—20.

No. 16—Contestant, confronted with a common type road and provided with a tape measure, is required to determine the military classification of that road. Maximum score—20.

No. 17—Contestant comes upon a small tableau representing what a patrol leader might come upon in the course of a combat action. He must observe carefully this scene, and then, at a point 50 yards away, must answer five questions testing his capacity of military observation and memory. Maximum score—50.

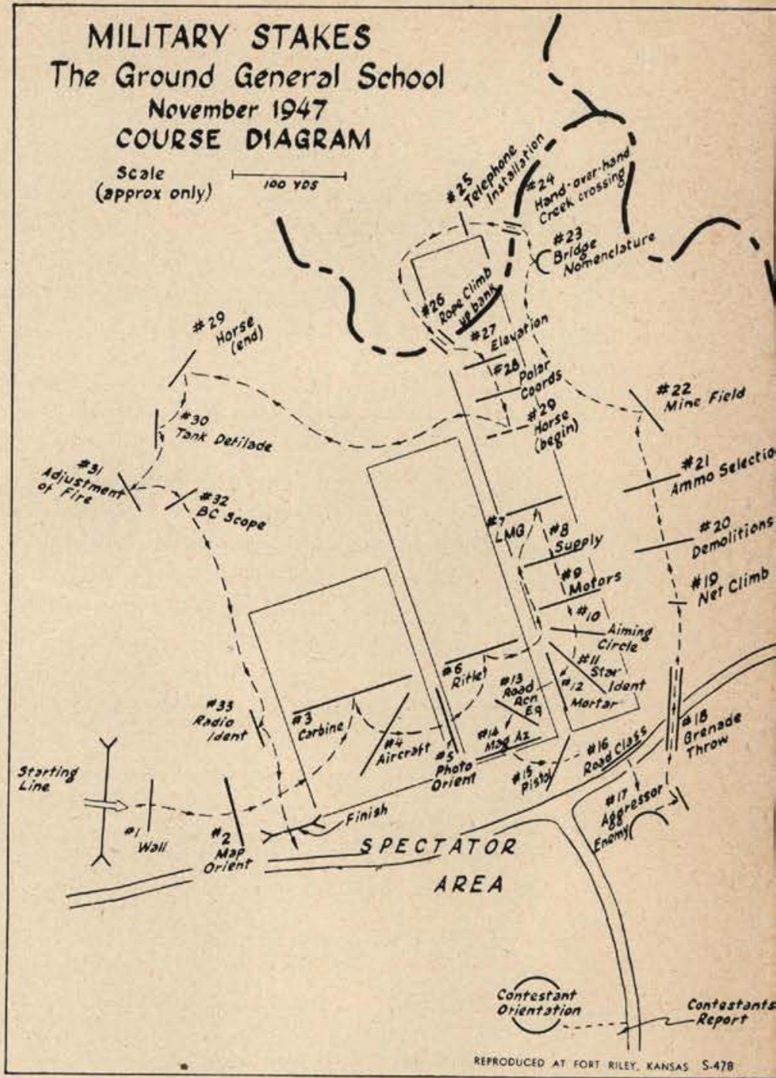
No. 18—Contestant attempts to hit with practice hand grenades three targets, representing the open hatch of a tank turret, a foxhole, and a window. Maximum score—20.

No. 19—Contestant climbs over a net similar to landing nets used on shipside of an assault transport. Maximum score—15.

No. 20—Contestant, with available dummy TNT blocks, fuses, caps, and tape, must place this material to cut a timber. Maximum score—20.

No. 21—Contestant, faced with four different types of ammunition (105mm HEAT; 75mm Gun HE, super-charge; 81mm mortar HE, heavy; and 81mm mortar HE, light) plus a map indication of what target he must engage from a gun position corresponding to his own position, is required to select the one round which will effectively engage that target. Maximum score—20.

No. 22—Contestant sees an antitank mine field laid out on the ground; he must detect the error which has been made in the set-up of it. Maximum score—20.


MILITARY STAKES
The Ground General School
November 1947
COURSE DIAGRAM
Scale (approx only)
100 YDS
#25 Telephone Installation
#24 Hand-over-hand Creek crossing
#23 Bridge Nomenclature
#26 Rope Climb up bank
#27 Elevation
#28 Polar Coords
#29 Horse (begin)
#29 Horse (end)
#22 Mine Field
#30 Tank Defilade
#31 Adjustment of Fire
#32 BC Scope
#21 Ammo Selectio
#20 Demolitions
#19 Net Climb
#7 LMG
#8 Supply
#9 Motors
#10 Aiming Circle
#11 Star Ident
#12 Mortar
#13 Road Rcn Eq
#6 Rifle
#33 Radio Ident
#3 Carbine
#4 Aircraft
#5 Photo Orient
#14 Mag Az
#15 Pistol
#16 Road Class
#18 Grenade Throw
#17 Aggressor Enemy
Starting Line
#1 Wall
#2 Map Orient
Finish
SPECTATOR AREA
Contestant Orientation
Contestants Report
REPRODUCED AT FORT RILEY, KANSAS S-478

No. 23—On a scale model bridge, contestant must select the proper nomenclature for certain vital parts. Maximum score—20.

No. 24—Contestant must cross a deep, muddy creek by means of a 1½-inch rope suspended from bank to bank. Failure to accomplish this carries a penalty of its own. Maximum score—25.

No. 25—Contestant must hook up a field telephone and proof his job by calling a switchboard. Maximum score—20.

No. 26—Contestant must cross a creek on a narrow log, and then, with the aid of a rope, pull himself up a near-vertical bank about 14 feet high. Maximum score—20.

No. 27—With the aid of a map, contestant must determine elevation of a certain point on the ground indicated by a flagpole. Maximum score—15.

No. 28—With the aid of a map and compass, the contestant must determine polar coordinates of the same point on the ground. Maximum score—15.

No. 29—From a picket line containing a number of horses equipped with bridle and halter shank only, contestant must select one and deliver it to a point about 500 yards distant, on top of a hill. Penalty assessed if horse is not ridden, and time is also lost. Maximum score—15.

No. 30—Of three light tanks positioned to engage a designated target, contestant must select that one in proper defilade. Maximum score—20.

No. 31—Contestant sees an artillery round (represented) falling and is required to select the correction necessary to cause the next round to hit a prescribed target. Maximum score—20.

You are an artillery forward observer. You have located an Aggressor S P Gun (indicated by the white target to your direct front) and are adjusting on it. The round you see falling in the vicinity of the target is yours. The battery is located to your right rear. Indicate the correction you would give to place the next round on the target.

a. Right 200, repeat range
b. Left 200, add 100
c. Repeat deflection, add 200
d. Right 100, add 200

USE ANSWER BOARD

No. 32—Contestant is required to lay a battery commander's telescope on a base point indicated on a map. Maximum score—20.

No. 33—Contestant must identify a radio according to its military characteristics. Maximum score—15.

* * *

Each station is arranged so that:

1. Each contestant finds a small numbered sign corresponding to his own number, and pinned to his number sign is a card giving him brief but very clear instructions as to the task he must accomplish at that station.

2. No contestant is held up by crowding by other contestants.

3. No difficulty is encountered by a contestant in finding his way from station to station: pathfinding does not enter into the competition. Tapes and directional arrows make the way clear.

4. No equipment is required to be carried by the contestant.

5. No writing is required.

6. No verbal instruction to or verbal report by the contestant is required.

* * *

All contestants of a heat start simultaneously, so that each contestant must race other students as well as against time. An individual score is kept for each contestant at each station, and an over-all course time for each is also taken.

The maximum over-all score is 1000. The 33 stations listed above have a total of 700 points maximum score; the remaining 300 points maximum score is allotted for time. Each station has a maximum and minimum score, which last is O. For some stations, a partial score is possible: for example, the contestant is awarded 15 points for assembling his rifle, and an additional 20 points for breaking a balloon with it. If he fails to clear his rifle at the completion of his firing, he is assessed a 5-point penalty.

Forty-five minutes for the course at Fort Riley was selected as an impossible time, and a 4-point penalty is assessed for every minute used by the contestant above 45 minutes. The fastest time made by any one of the 209 contestants so far competing was just under 50 minutes. So that the course might be put in shape for the next heat, one hour and 45 minutes was the maximum time allowed to run it, and it was occasionally necessary to shoo off the course a contestant taking more than that amount of time.

Certain administrative matters must be considered in setting up a competition such as this. Some of these are: an announcer system to describe the contest to spectators, timers, safety officer, ambulances, and range guards; a fire-fighting detail in dry weather (tracers cause lots of fires); military police to handle traffic, parking, and to control spectators; numbers for contestants, made of canvas and with a safety pin at each corner.

Ample time must also be allowed for construction of necessary material. The "spot" signs are constructed by spot welding light metal plate to rods taken from ammunition clover-leafs. Station signs and answer boards are constructed of wood. Enough extra items should be made to take care of breakage. Storage of this material should be arranged, since it can be used again and again.

Each station has score sheets which are made out in duplicate, and when the last man in each heat passes the station, are delivered to the scorekeeper by special messenger. The scorekeeper (who is not the scoreboard operator) is thus able to keep a running total on each contestant, and the winner of each heat is announced within ten minutes of completion by the last man.

The course is clearly marked by utilizing a number of yellow directional arrows, and by taping a lane wherever necessary. The tape on the right is marked by green swatches, the tape on the left by red swatches.

A scoreboard, supported by an elaborate communications system, indicates the location of each contestant while he is on the course and further indicates whether he passes each station with or without penalty.

Just prior to the running of the course, it is necessary that contestants be oriented verbally as to the general layout of the course, meaning of "spot" signs, use of answer boards, safety precautions, etc. This orientation requires about 15 minutes.

Contestants are required to wear light fatigue clothing and combat boots. They are permitted to wear headgear of their own choosing. They are not required to carry any equipment.

Since it is not desirable that a leading contestant be held up by reason of firing by others lagging behind, the course is laid out to obviate such delay. Note in Figure 1 that the firing stations all come early: 3, 6, and 7. The course then bends back away from Station No. 7 in a long loop crowded with a number of time-consuming stations. Because of this device it was never possible for the leading contestant to get as far as Station 21 before all firing was completed on Station 7. After the last contestant completes firing on Station 7, the safety officer fires a green flare and pulls down from a small flagpole a red flag, substituting for it a white flag. On this signal, personnel manning and controlling stations down-range (23 through 32) are able to come out from cover and man their stations well in advance of the arrival of the leading contestants.

The balloons used in firing stations are ordinary red or black toy balloons, filled with hydrogen. Each balloon is tied to a stick or board with a string about six inches long, which is enough to make the balloons bob very considerably in the light wind which is usual. Occasionally a balloon breaks accidentally—this makes it necessary to provide in advance a number of extras, tied to long poles. When a balloon breaks, a man in the pits is telephoned to hoist one of the substitute balloons behind the proper target number.

The course at Fort Riley is particularly adaptable, since it is built around a rifle range. The rifle range permits safe firing by three weapons simultaneously, and it is not necessary that all firing points be abreast, since high earthen banks partition the range into three parts. This area is also appropriate by reason of a number of surrounding hills, a moderately large creek, a storage range house, and good access roads.

* * *

The reaction of contestants who have run the course thus far has been almost uniformly favorable. Of a large number questioned, none indicated a serious objection to the course; all stated that it was a strenuous but instructive test; none objected on the basis that he was placed on unfamiliar ground. The event is adaptable to all kinds of weather, with the exception of heavy fog, or rain or snow actually falling. The competition for AOC 15 was run at a temperature of about 25° and in six inches of fresh snow.

The Military Stakes, although not an excessively difficult physical test, does put the contestants under a fairly severe mental and physical pressure. It was noted at stations occurring late in the course that contestants moving in the leading half of each heat were generally the most alert and accurate in their actions at those stations. Contestants arriving among the last in each heat were comparatively careless and inaccurate, due to obvious fatigue.

Such a competition is very illuminating in pointing up training deficiencies among the contestants. In it there is no possibility of misunderstanding of verbal instructions, since there are no verbal instructions. All requirements are eminently practical, and the battlefield necessity of the knowledge involved is easily demonstrable. Students are much impressed by the positive proof that they can, or cannot, read a map, fire a weapon accurately, lay a mortar, fix a jeep, or do any of the many other tasks involved. Other units may use this type of course to advantage.

BOOKS ON HORSES AND HORSEMEN

TEXTS FOR EVERYONE
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CAVALRYMEN

BOOK DEPARTMENT

Armored Cavalry Journal

1719 K Street, N.W., Washington 6, D. C.

Report of the Annual Meeting of The Armored Cavalry Association

PROCEEDINGS

The 59th Annual Meeting of the Armored Cavalry Association (formerly The Cavalry Association) was held Monday evening, January 26, 1948, at the Army-Navy Club in Washington. Present were twenty members, while 438 additional members were represented by proxy cards.

Major General I. D. White, President of the Association for the year 1947, presided. Opening the meeting General White introduced the subject of the reading of minutes of the previous meeting, which was waived in a motion from the floor. Colonel Edwin M. Sumner, Secretary-Treasurer, then read the Financial Statement (see below), following it with a brief summary of the year's activities. The statement was accepted and the meeting proceeded to the election of officers for 1948.

A suggested list of candidates was drawn up and voted upon by means of secret written ballot. Major General Ernest N. Harmon was elected President, and Major General Hobart R. Gay was elected Vice President.

The nine-member Executive Council was elected with an eye to balance, and the result was attained through a broad interpretation of the Constitution of the Association in relation to location of candidates, which permitted acceptance of candidates within reaching distance of Washington rather than just within the city. The elected body includes representatives of a large segment in the Armored field, and National Guard and Organized Reserve have their members.

The election of officials was followed by an appraisal of activities for the forthcoming year, in order to perpetuate the service of the Association and its Journal to members and readers.

General Henry introduced a motion from the floor for expressions of thanks to outgoing President General White for his efforts on behalf of the Association and his time and trouble for the long trip from Fort Riley to attend executive sessions; to outgoing Vice President General Holbrook for his personal interest in making himself available on numerous occasions in transacting Association business; and to Major Hal D. Steward, outgoing Associate Editor, for his valuable work on the Journal during the period of his editorship.

Colonel Seone spoke of the forthcoming visit of veterans and other interested persons to the Santiago battleground, and the 59th Annual Meeting of the Armored Cavalry Association was adjourned.

FINANCIAL STATEMENT

FINANCIAL STATEMENT FOR THE YEAR 1947

Department	*Receipts*	*Expenditures*
Armored Cavalry Journal	$ 8,683.68	$ 7,082.92
Book Department	4,662.35	4,339.43
Armed Forces Digest	131.78	....
Rent and Rental Expense	900.00	1,832.10
Interest on Securities	174.03	....
Eleventh Armored Division Association	5,598.74	2,781.94
Miscellaneous	892.44	829.79
Stationery and Postage	....	1,036.93
Salaries		2,880.15
Social Security Taxes		67.86
Withholding Taxes		472.30
Insurance		30.54
Janitor		61.00
Office Supplies		513.41
Telephone and Telegraph		307.32
Bank Balance as of January 1, 1947	2,796.49	
Bank Balance as of December 31, 1947		1,563.82
	$23,799.51	$23,799.51

ASSETS

Bank Balance—December 31, 1947		$ 1,563.82
Stock on hand:		
November-December Journals	12.00	
Office Supplies	250.00	
Chamberlin Books (Riding & Schooling Horses: 2560 at 2.40 minimum val)	6,144.00	
Chamberlin Books on consignment (50)	170.00	
Assorted Books	15.00	
Government Printing Office Deposit	27.61	6,618.61
ACCOUNTS RECEIVABLE		
Subscriptions		
167—12's Due Oct 1, 1947	501.00	
365— 2's Due Dec 1, 1947	1,095.00	
90—Bulk (Due bimonthly)	270.00	
Book Department	484.88	2,350.88
SECURITIES		
12 Shares A. T. & T. CO.	2,040.00	
12 Bonds A. T. & T. CO.	200.00	
2 U. S. Government Bonds	2,000.00	4,240.00
OFFICE EQUIPMENT		
Depreciated Value (5%)		1,511.85
TOTAL ASSETS		$16,285.16

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Armored Division Associations

SHOULD THE ARMORED DIVISION ASSOCIATIONS BE ABOLISHED?

by Major Charles W. Walson, Cavalry

[EDITOR'S NOTE: In recent weeks there has been much talk concerning the effectiveness of Division Associations acting individually, and the possibility of combining all Armored Division Associations into a united group within which the individual organizations would retain their respective identities while operating for the general good. Major Charles W. Walson, an instructor in the Reserve Training Program, was one of the first to sum things up in a written appraisal. In the interest of provoking thought on the subject and getting an expression of opinion from various sources, we are sacrificing the usual News Notes in this issue, and in their place we are offering Major Walson's ideas. Comment is requested and will be appreciated.]

VERY recently I was informed that the Third Armored Division, to which I was assigned for a short time in combat, was forming an association. Remembering the friendships I had made while I was a member of the Third Armored, I was eager to join and relive the few months when I was in this division, as well as to renew past friendships.

However, I have had some doubts as to the advisability of an association of this nature. I am sure that my ideas are not original, but I have not seen them expressed in print, and I thought that perhaps a review of the purposes and future of the division associations would be useful at this time. I have half convinced myself that these division associations should be abolished and, without wishing to tilt at windmills, I would like to state my reasons for such a conclusion and present a possible solution.

In the first place, the division associations are generally organized for the purpose of maintaining *esprit de corps,* reliving the past, continuing old friendships, and aiding those members who are in need.

Now, what is the immediate reaction of someone who is *not* a member of such an association? Isn't it closely akin to the attitude that was expressed by many officers during the war when they discussed the mythical WPPA (West Point Protective Association)? Aren't we opening ourselves to charges of forming cliques? Isn't the charge of favoritism within the army a possibility that we should consider?

The army hopes to commission many regular officers through its competitive tours. At this time many ROTC graduates are ex-servicemen. In a competition between an association member and a non-member, would the association member be favored by a rating officer of the same association? We, ourselves, are sure that each man would be judged on his merits, but what defense would we have against such charges?

These ideas sound ridiculous at first, I am sure, but wasn't the fuss raised in the navy concerning the Green Bowlers quite similar to one which might be raised about our purely social organizations?

Is an association which is frankly dedicated to reliving the past strong enough to endure? Would it not be better to look to the future as well? Past friendships should be maintained I believe, but I think that they should be developed through constructive work and not by reliving the past alone. They have been strengthened and well formed in combat but they must continue to grow.

Perhaps another argument against these associations may be based on the fact that they represent relatively small groups in our present day army as well as among our veterans. The veterans who served in separate tank battalions, in mechanized cavalry units, in the Armored Replacement Center, Armored School, and Tank Destroyer units are just as loyal to their old outfits even though their units may be too small to organize.

One other problem which I and many others will encounter is that of which association to join. For example, I was with the Fourth Armored for 15 months from its activation. I have strong attachments there and friends that I would like to see again. I have already mentioned my tour with the Third in combat, but I was also with the Tenth for a long enough period to be interested in its war activities and honors. Now which division association should I join? All three?

I believe that the solution that I wish to propose is the most satisfactory one. We already have in being an Armored Cavalry Association which publishes a fine journal with service-wide distribution. Why can't the division associations voluntarily disband and invite their members to join this association? Why can't the activities of this association be expanded to include a convention where we may all meet together and relive the old days as well as to work for the future of armor?

There appear to be many advantages to this solution. We would have an excellent JOURNAL in which a section could keep us posted on the activities of members of our old divisions. We would have the opportunity for good fellowship and yet we could keep posted on the present activities and future developments of armor. The organization could include everybody interested in armor and would be open to no charges of favoritism.

The organization would be a living organization which would be of aid to our army. Our JOURNAL is a fine one but it could be improved by directing the energies of all the fine division organizations through one channel. Our armored tactics, organization, and matériel cannot remain static. We can't hope to progress simply through rehashing past campaigns. New ideas must be expressed, discussed and pondered.

Recently I attended one meeting of the Air Force Association Convention in Columbus, Ohio where I am now stationed. Representatives from state groups all over the nation were present. Men of each air force registered on arrival with their old outfit and saw their old friends again. Old friendships were revived, and happy fraternization prevailed, yet the *entire* wartime Air Force was represented. The members were reliving the past, but they were also interested in the future of the Air Force. I think that this meeting clearly demonstrated the practicability of my idea.

I feel that there is still another advantage to a strong Armored Cavalry Association. At the present time I am on ROTC duty with the mission of training men for Reserve commissions in the Armored Cavalry. Naturally, we are all interested in having the very best Reserve officers in our branch, but we are losing ground to the Air Forces and the Services in the competition for the best men.

Now nobody knows better than an Armored man the strong need for cooperation between the branches, but in honest, straightforward competition for the best men shouldn't we exhibit the same drive as the others? The branches that still have chiefs to represent them are forging ahead at this time. The Engineer instructor periodically receives displays advertising his branch, *selling* it to prospective Advanced ROTC students. The Ordnance does the same. The Transportation Corps and Air Forces aid their instructors in many ways. Shouldn't the Armored Cavalry ROTC, National Guard, and Officer Reserve Corps instructors receive the same type of aid from some central source? What source would be better than the Armored Cavalry Association?

I know that there must be many arguments against these ideas, and I would like to hear them. For one thing, I think that many division associations would be afraid that they would be swallowed up by such a large organization and that there would not be the same appeal for men to join an over-all Armored Association as to join their old outfit's organization. I think that organizing our meetings in the manner of the Air Force Association would take care of this difficulty as well as assuring more permanency to it.

Another argument that might be raised is that the Armored Cavalry is only one branch but there are many branches represented in a division association. I feel that the common interest in Armor would hold us all together, and that renaming the association as the Armored Association would accomplish this purpose adequately.

What do you think of the idea of dissolving the division associations and strengthening the Armored Cavalry or Armored Association? Would it work? Should the present Armored Division Associations pass resolutions joining them to the Armored Association or dissolving entirely and inviting their members to join it?

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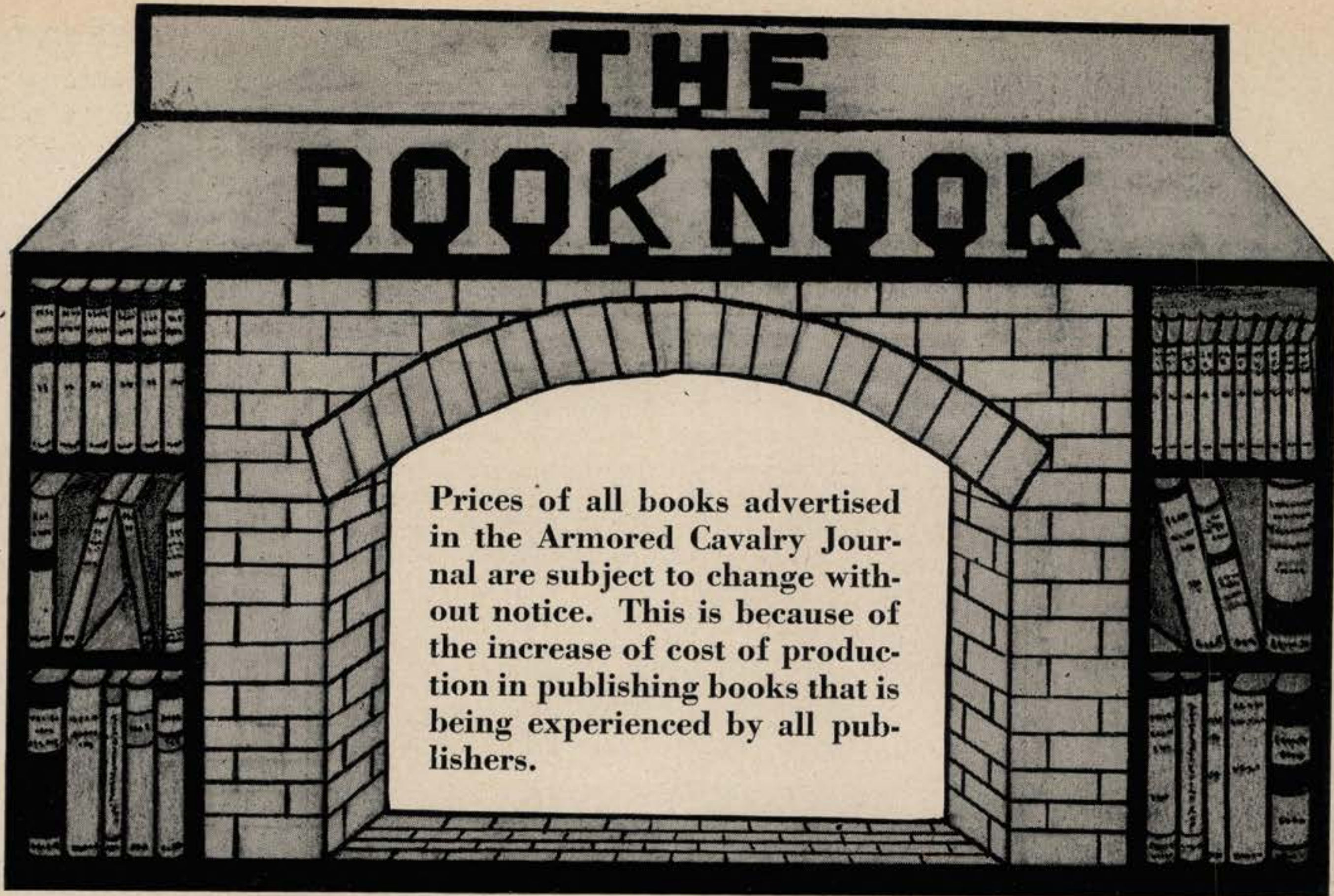

Prices of all books advertised in the Armored Cavalry Journal are subject to change without notice. This is because of the increase of cost of production in publishing books that is being experienced by all publishers.

AIRBORNE WARFARE. By Major General James M. Gavin. Infantry Journal Press. $3.00.

General James M. Gavin was one of our top Allied Airborne Commanders in the late war. Militarily well grounded he entered this field of new combat technique in its creative period. The combination of a young officer in a young scheme was a good one. Developing with the advance in airborne training, General Gavin contributed substantially to the architectural structure.

Writing from his background as a participating commander, an observer and a student of airborne operations, General Gavin gives in sequence an objective report of all such operations in World War II. There is a strong impact upon the reader in keeping pace with the lightning evolution of a new phase of modern warfare. Starting from a tentative training state, each successive operation in combat marks a tremendous stride into experience and effectiveness.

One of the real values of this book lies in its full balance. It is auspicious in authorship. It covers the formative period of airborne warfare. The actual combat operations are molded from their inspiration on through high level planning, preparation, operation, value, results, mistakes and lessons learned.

General Gavin doesn't stop with the Corregidor jump. He gives a full evaluation of the past and present, and reads the results into the future in a provocative manner, a manner which must challenge military and civilian thought. This we need.

Certain aspects are perhaps hastily covered and glancingly treated. There is an artful dismissal of mistakes and adverse percentages; careful analysis is devoted to the plus side of things. There will be substantial issue taken with remarks on armored equipment. However, this is a book for all to read and analyze. Here is a material segment of modern warfare that demands our attention. Looking to the future, we must meet and act upon it with a vigor commensurate with the proper acquittal of our responsibilities to our country and its position of world leadership.

W. G. B.

* * *

THE 1ST CAVALRY DIVISION IN WORLD WAR II. Compiled by Major B. C. Wright. Published in Japan. Distributed in the United States by the Armored Cavalry Journal. $3.00. (Paper bound.)

First into the Philippines, first into Manila, and first into Tokyo are just three of the accomplishments of the 1st Cavalry Division. These events and hundreds more that made the 1st Cavalry Division one of the outstanding American divisions in World War II are recorded in the pages of this top-notch military history.

The 1st Cavalry Division in World War II contains story after story of heroism and sacrifice. It is not a book of tactics and strategy, but rather a running story of the actions of individuals.

Chapter One tells the history of the Division from Indian Fighting to New Guinea. Then the Admiralty, Leyte-Samar, and Luzon campaigns are covered in a chapter each. Artillery Combat Operations and the Occupation of Japan are covered in other chapters. All in all the history is thoroughly complete.

In his Foreword to the book, the author writes, "This is the account of the 1st Cavalry Division's activities in World War II. It has been prepared in an effort to pay a measure of tribute to those brave heroes, living and dead, who gave so much of themselves and their abilities in order that The First Team might be First."

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The history has pictures of every important event the Division took part in.

General of the Army Douglas MacArthur writes of the Division, "No greater record has emerged from the War than that of the 1st Cavalry Division—swift and sure in attack, tenacious and durable in defense, and loyal and cheerful under hardship. It has written its own noble history. My personal connection with it in many moments of crisis has especially endeared it to me."

Other tributes are paid the Division by General Walter Kreuger, and Lieutenant General Robert Eichelberger, Army commanders under which the Division served.

One of the greatest achievements of the 1st Cavalry Division was its liberation of the Santo Tomas Internment Camp in Manila where some 3700 Allied civilians had been held prisoners by the Japs for over three years. This, which occurred on February 3, 1945, is splendidly covered in the history. It will revive the memories of many present and former members of the 1st Cavalry Division.

For the combat members of the Division who returned home before the 1st Cavalry Division departed for Japan, the chapter entitled "First in Tokyo—The Occupation of Japan" will be of intense interest. It covers the high points of the Division's occupational activities.

And now, as a permanent record of the Division's many accomplishments, we have *The 1st Cavalry Division in World War II.*

This book is worthy of being read by every American.

H. D. S.

* * *

SILVER WINGS. By Edwin L. Wilber and Estelle R. Schoenholtz. Appleton-Century. $2.50.

In *Silver Wings* we have a new angle in military books. This is an Air Force story directed to the youngsters of America—human interest narratives of air heroes in the late war. The Milton Caniff drawings and the action type of incidents give it almost a Sunday "Funnies" flavor; however, background is rich in fact and the treatment is appropriate to the book's purpose.

Royalties from the sale of this book will go to the Army Air Forces Aid Society. There is a foreword by General Hap Arnold, and the writing scheme by which the stories are introduced lends a thread of contact and a background continuity to the presentation of the various wartime incidents, thus holding the interest nicely. The purpose of the book is well served.

W. G. B.

* * *

BACK HOME. By Bill Mauldin. William Sloane Associates. $3.50.

This is a strange book. There will be varied reaction among its readers. The whole range of opinion will be provoked. An odd combination of feelings prods the reader. Intermixed are idealism, immaturity, humor, excuse and a lot more. There is a shadow impression of ghost writing. Anyone with a chip on the shoulder about anything will find a response here.

The close of the book brings almost a sigh of relief and a vague agreement with the author that it's good to get this book off the chest; maturity has come.

Bill Mauldin's cartoons are consistently fine. If only they could have appeared unadorned by explanation!

W. G. B.

CONQUER: The History of the Ninth Army. Infantry Journal Press. $4.50.

This is one of the better organization histories to come out of the Second World War. Here is dignity and objectivity, unadorned by bombast, idealistic ranting or, to use the current idiom, corn.

There is a truly fine picture of General William H. Simpson, the Ninth's Commander, fronting the story. Under his signature the facing page carries a message—not the familiar high-flown tripe, but a message with a character of simplicity and dignity which leaves no doubt as to its sincerity.

Preparation of this history was no off-the-elbow scheme, but a well planned project auguring success from the start. A committee of senior officers was set up to do the job properly, and properly the job was done.

For the record, several pages only are given over to the formative period of Ninth Army. The scene then shifts to the Brittany Peninsula and things get under way with a plunge into the siege of Brest. The full story of the Ninth then unfolds, with care given to all aspects of the operation of an Army under the pressure of war. The push to the Roer, Rhine and Elbe is covered in detail, and with VE Day, the transition to occupation and military government. Usual appendices carry the load of statistics, and the book is topped out by a section of photographs more harmonious than many we've seen to date.

This book will provide interest well beyond membership in Ninth Army. W. G. B.

* * *

THE 409TH INFANTRY IN WORLD WAR II. By Sergeant William East and Private William F. Gleason. Infantry Journal Press. $5.00.

This is a history of one of the regiments of the 103rd Cactus Division, with the value of authorship from the enlisted ranks. The familiar pattern is followed with peak interest to be found in the combat experiences in the Rhineland and in Central Europe. Fadeout comes in Austria. There is strong interest here for Cactus Division members. W. G. B.

* * *

FLYING MINUTE MEN. By Robert E. Neprud. Duell, Sloan and Pearce. $3.00.

When Pearl Harbor shocked us awake and plunged us into a war, we were unprepared. One piece of the patchwork quilt woven to meet the emergency was the organization of the non-military, non-commercial flyers of small planes across the country into a group capable of meeting certain phases of the emergency. *Flying Minute Men* is the story of these flying enthusiasts in their great contribution to carrying us through a ticklish period. Their work in coast defense, anti-submarine patrol, air-sea rescue, ground search, border patrol and other activities was outstanding.

Other than good storytelling, this book fills a more basic need of our nation today. It brings into focus the relation of each citizen of this country to its national defense; the individual responsibility of each person for support of that program of defense; the immediate involvement of the individual in the defense of the country in time of emergency; and the burden of guilt for insufficient defense.

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Civil Air Patrol members were one segment only of our civil potential made operative through emergency. They prove the value of our American initiative. They did a fine job, and there is no reason to believe that they and similar fields of activity will not be arbitrarily embroiled by possible exigencies of the future.

Members of the Armed Forces will appreciate the part played by Civil Air Patrol in the late war. Civilian readers will benefit through increased consciousness. W. G. B.

* * *

PSYCHOLOGICAL WARFARE. By Paul M. A. Linebarger. Infantry Journal Press. $3.50.

To most of us propaganda has a Hitlerian connotation and psychological warfare is some vague thing connected with the late war. We fall short of a follow-through that would tag American advertising as the most professional propaganda in the world, from which Goebbels drew many of his ideas. We haven't enough consciousness to bring appreciation of psychological warfare out of the technical aura and into the general light.

The material phases of the art are somewhat familiar. Members of the Armed Forces recall mobile sound units and Axis Sally broadcasts. This reviewer recalls leading a recon patrol into Jerryland in Italy's North Apennines, and, while crawling on hands and knees through a ticklish spot, of hearing a faint rattle of paper under a carefully placed hand; later inspection at the CP produced a copy of *Frontpost,* propaganda leaflet from the Yanks to the Krauts informing them of the failure of the Ardennes Offensive.

Major Linebarger's book is technical and historical, but is also interesting reading on an interesting subject. In this day when psychological warfare goes on between two great ideologies it is remunerative reading. Based upon the consciousness, technical ability, methods and effectiveness of the subject which the book indicates we possess, it is hoped that we will carry on in the van. We should not let our inherent sense of decency retard our development in the slyer aspects of a necessary medium, neither should we allow ourselves to be out-advertised in the more aboveboard end of the game. W. G. B.

* * *

REVOLUTION IN WARFARE. By B. H. Liddell Hart. Yale University Press. $2.00.

This latest book by Captain Liddell Hart, Britain's leading writer on military affairs, emphasizes the importance of science and scientists in any future wars. He states, "In the future, the quality of a handful of scientists may weigh more heavily than any conscript mass of infantry, reducing to absurdity the quantitative value of human numbers, while nullifying both the appeal and the power of 'militarism.' "

As for military education to cope with the present "scientific age," Captain Hart writes, "Military education hitherto has not been designed to reach a scientific approach to problems, but rather to develop executive skill and foster the spirit of loyalty. That system has made much progress in the production of commanders and of staff officers. But to tackle the defense problems of the future the greatest of our needs is to produce 'military scientists' for the higher planning."

The book as a whole describes the development of modern warfare in terms of the tools of war, from the growth of firepower in the Napoleonic wars to the evolution of the tank.

Of conscription, Captain Hart says, "Conscription—that much favored panacea for national security—will not meet the problem. In a war where atomic bombing was unleashed, a large conscript army would merely represent a large amount of wasted effort. In the case where atomic bombing was held in suspense, a conscript army that only became available after mobilization would hardly be effective to check the kind of camouflaged penetration or surprise invasion that aggressors may still attempt."

Revolution in Warfare is an excellent book. Every reader may not agree with Captain Hart's ideas and theories, but they will give him something to think about.
H. D. S.

* * *

HISTORY OF THE 363RD INFANTRY REGIMENT. By Captain Ralph E. Strootman. Infantry Journal Press. $5.00.

The publication of a regimental history is an ambitious project. Few histories have been published on units below divisional level, for obvious reasons. This is unfortunate, for in the smaller unit there is available a personalization proportionately missing in a larger unit. In regiment and battalion attention can center upon the individual soldier and his individual enemy. Thus a story of real value to the military and civilian reader.

Captain Strootman has done an excellent job on this history of the 363rd Regiment of the 91st Pine Tree Division. The story is well documented, and is gifted by the technical publication excellence of the Infantry Journal Press. It is unfortunate that reading of unit histories is so limited to the small public of unit membership. They might well be more widely read. There is some good background here on the Italian Campaign.
W. G. B.

* * *

THE 90TH: A History of the 90th Infantry Division in World War II. By Lieutenants Joe I. Abrams and William P. Flynn, Jr. Army and Navy Publishing Company. $5.00.

The men of the 90th Division deserve a better history than this one. Perhaps there are a number of reasons for a thoroughly poor job. The writing is not good. The tone throughout has a "we won the war" temper carrying the impression that a single division landed at Normandy to knife across the Continent, slice the German Forces in two, and bring victory. The trite style has a Texian flavor that must bring a flush to the ears of many TO men. The cover of the book is a beautiful leather elaborately done—so elaborate, in fact, that it has no dignity. Paper stock is poor, and the number of mistakes throughout indicate a lack of proofreading; there are five on the first page. The composition work is low quality. In deference to good intention, sacrifice, and effort expended, to whatever extent, the fault probably can be charged to editorial inexperience. It is difficult to extend that grace to the printer.
W. G. B.

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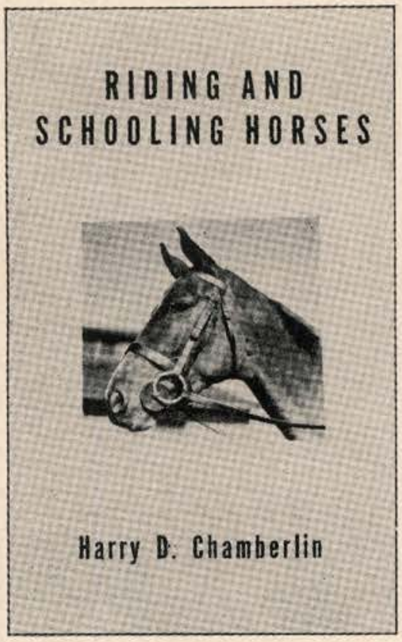

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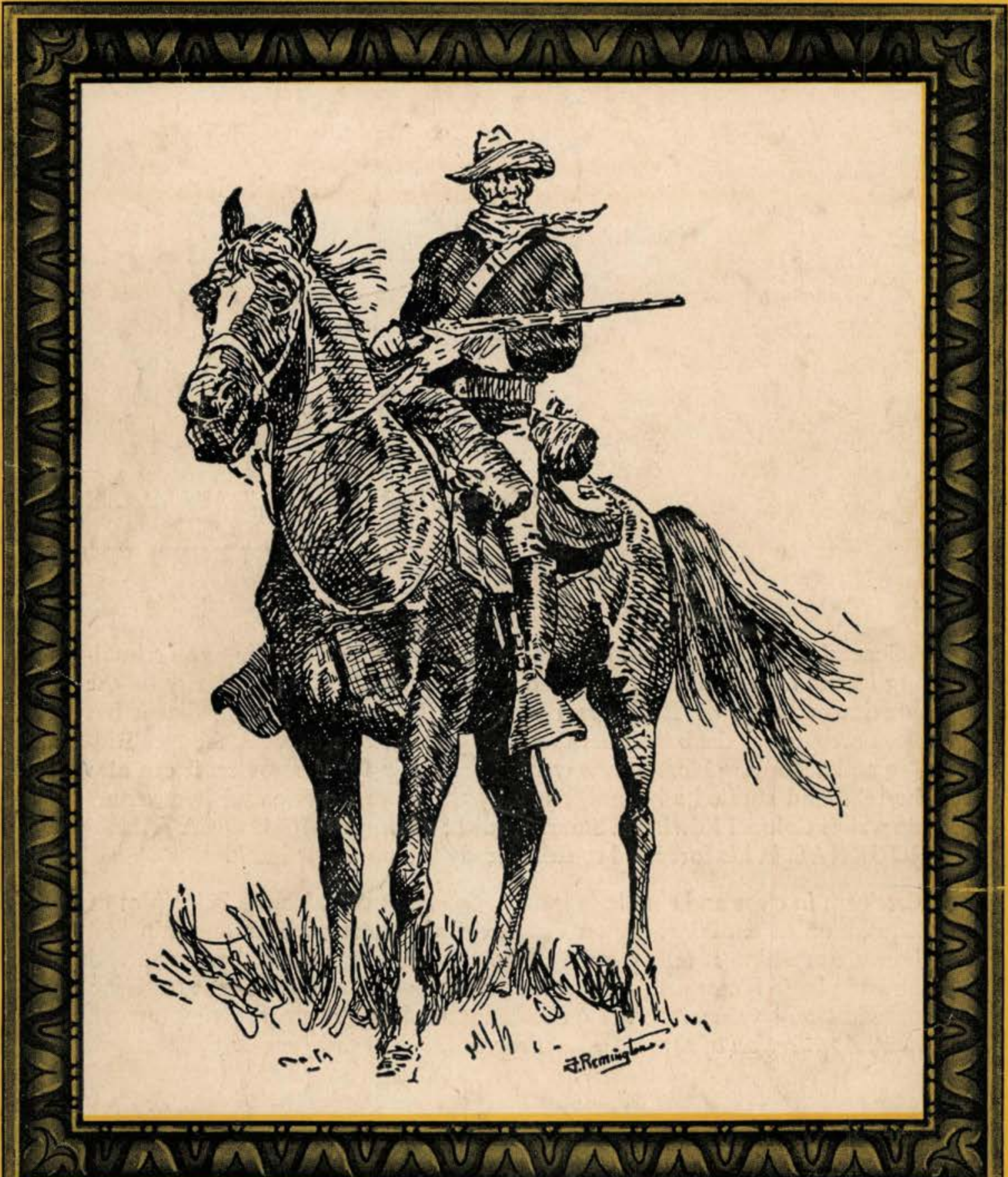
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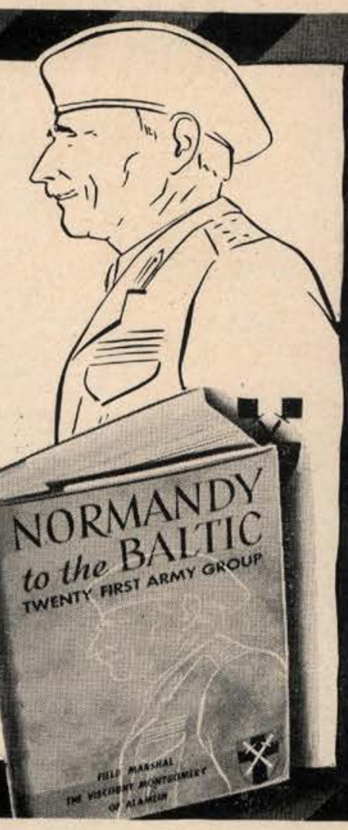
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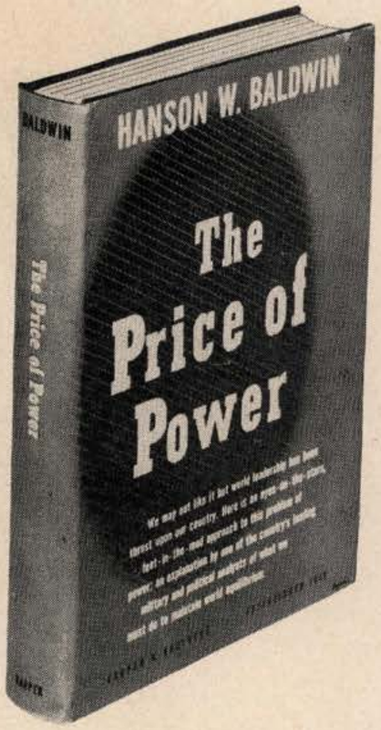
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Armored Cavalry Journal

Published Bimonthly by The U. S. Armored Cavalry Association

COLONEL EDWIN M. SUMNER, *Editor*
CAPTAIN WILLIAM G. BELL, *Associate Editor*
NATICA A. BROWN, *Business Manager*
All manuscripts and mail should be addressed to the editorial offices.

Volume LVII — MAY-JUNE, 1948 — Number 3

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Publication date: May 25, 1948. Deadline date, next issue: June 15, 1948.

THE ARMORED CAVALRY JOURNAL IS NOT RESPONSIBLE FOR OPINIONS EXPRESSED IN PUBLISHED CONTRIBUTIONS

Publication offices: 1406 East Franklin Street, Richmond, Virginia. Editorial offices: 1719 K Street, Northwest, Washington 6, D. C. Copyright, 1948, by the U. S. Armored Cavalry Association. Entered as second class matter at Richmond, Virginia, under the act of March 3, 1879, for mailing at special rate of postage in Section 412, Act of October 3, 1917. Terms: Domestic subscriptions, individual and organization (military or civilian), $3.00 per year. Foreign $3.50 per year. Canada: including War Exchange Tax, $3.50. All subscriptions payable in advance. Single copies, 75c. Extra copies to subscribers, 50c. The ARMORED CAVALRY JOURNAL *does not* carry paid advertisements.

CARDED

The Guards Armored Division In Operation Market-Garden

by Lieutenant Colonel Hugh M. Exton

Introduction

As the Allied forces advanced across Western Europe during the summer of 1944, it became apparent that the most favorable route to the heart of Germany was north of the Ruhr industrial region. In spite of the strained supply situation and the fact that the entrances to Antwerp had not yet been cleared, it was decided to mount an operation designed to seize crossings over the very important water barriers of the Maas, Waal, and lower Rhine Rivers in order to facilitate the later advance across the North German plain. For this operation it was decided to employ the airborne forces of the First Allied Airborne Army to seize the vital river crossings. This was known as Operation Market. The British Second Army would then advance to join up with the airborne forces and consolidate the gains thus made. This was known as Operation Garden. There have been many articles written about the operations of the airborne forces. This article, however, will deal primarily with the actions of 30 Corps of the British Second Army and in particular with the advance of the Guards Armored Division which spearheaded the 30 Corps to its junctures with the airborne divisions.

General Situation

By 11 September 1944 the Allied forces had reached the general line shown on Map. The British Second Army was established on and had small bridgeheads across L'Escaut Canal. The German forces, though disorganized, continued to offer stiff rear guard action and were attempting to organize defensive positions behind the major water obstacles. The Allied line of communications was approximately 400 miles long, stretching back to Le Havre and Normandy.

Mission of British Second Army

See Map. The British Second Army, with the airborne forces under command after their landing, was to position itself astride the rivers Maas, Waal, and lower Rhine in the general area Grave, Nijmegen, Arnhem, and to dominate the country as far north as the Zuider Zee, thereby cutting off communications between Germany and the Low Countries. The ground elements of the British Second Army consisted of 8, 30, and 12 Corps. The airborne forces consisted of the US 82d and 101st Airborne Divisions, the British 1st Airborne Division, and the Polish Parachute Brigade.

Missions of the Corps of Second Army

a. Mission of 30 Corps: 30 Corps, consisting of the Guards Armored Division and the 43d and 50th Infantry Divisions, was to advance in the center of the army zone, establish contact with the airborne forces, and secure the area from Arnhem to Nunspeet. See Map for division objectives.

b. Mission of 8 Corps: 8 Corps, consisting of the 3d Infantry Division, was to advance on the right of 30 Corps to protect the right flank and rear of 30 Corps.

c. Mission of 12 Corps: 12 Corps, consisting of the 7th Armored Division and the 15th Infantry Division, was to advance to protect the left flank of 30 Corps.

Missions of the Airborne Forces

a. Mission of the 1st British Airborne Division: The 1st British Airborne Division was to capture the bridges over the lower Rhine at Arnhem and dominate the surrounding country.

b. Mission of the 82d US Airborne Division: The 82d US Airborne Division was to capture intact the bridges over the Waal and Maas Rivers in the Grave-Nijmegen area and dominate the intervening country.

c. Mission of the 101st US Airborne Division: The 101st US Airborne Division was to drop between Eindhoven and Grave to facilitate the advance of 30 Corps as far north as the Maas.

The 30 Corps Plan

a. The general plan for the advance of 30 Corps was to have the Guards Armored Division, supported by heavy artillery and air concentrations, break out from its

---

Lieutenant Colonel Hugh M. Exton served in the 2d Armored Division from 1941 to 1944 successively as Executive of Division Artillery and Commanding Officer of the 78th Armored Field Artillery Battalion. In 1944 he returned to the Operations Division of the War Department General Staff. Next came assignment as Aide to the Secretary of War. He is now Instructor in the School of Combined Arms at the Command and General Staff College.

small bridgehead over L'Escaut Canal, advance rapidly on one main axis, followed by the 43d Infantry Division and the 50th Infantry Division, to seize the objectives north of the lower Rhine.

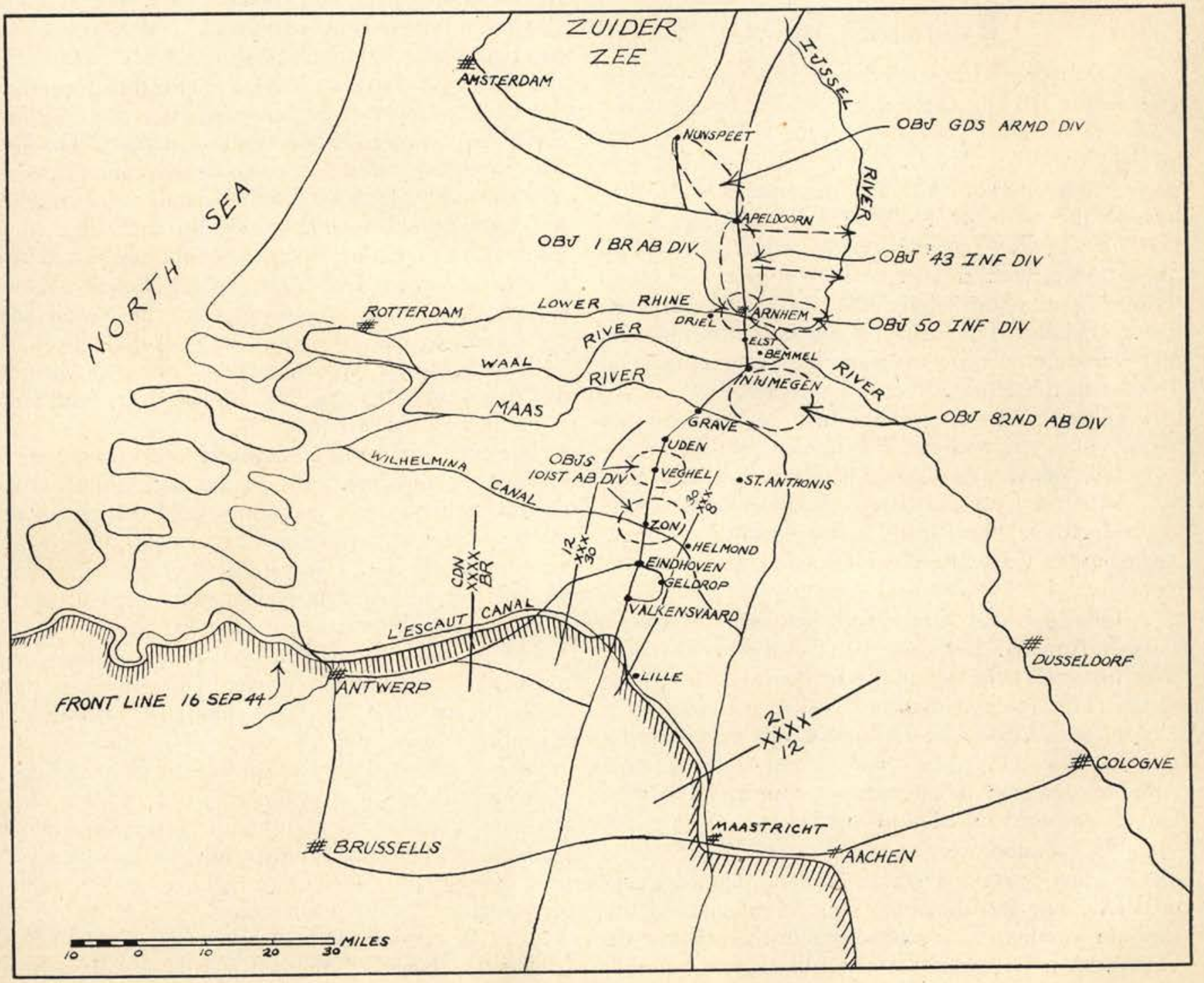
b. If bridges at Grave, Nijmegen, or Arnhem were found destroyed, the Guards Armored Division would fan out to the flanks on the south bank of the river and, in conjunction with airborne troops in the area, facilitate the bridging operations of the 43d Infantry Division.

c. The 43d Infantry Division was to closely follow the Guards Armored Division, seize its indicated objective north of Arnhem, and send detachments to secure crossings over the Ijssel River at Deventer and Zutphen. In case bridges over the Maas, Waal, or lower Rhine were found destroyed, it would conduct the necessary assault crossings and bridging operations.

d. The 50th Infantry Division would continue to hold the existing bridgehead over L'Escaut Canal and thereafter follow the 43d Infantry Division as corps reserve, prepared to seize its indicated objective.

e. Juncture plans.—The plans for the junctures between the airborne divisions and the Guards Armored Division were based on the fact that arrangements would be made at the proper times over the radio nets between the divisions. Also, it was known that the junctures would be effected on the one road which was the axis of advance of the Guards Armored Division. For use in case junctures were effected at night, a schedule of passwords was issued to all units.

f. Air support.—The air support planning was based on the assumption that during the airdrop, fighter and fighter-bomber aircraft would be concentrated on protecting the troop carrier formations. As soon as the drop was over, the 83d Fighter Group would support 30 Corps. This support was to consist, during the break-out, of one squadron of Typhoons strafing the road ahead of the leading elements for 35 minutes. This would be followed by the assignment of flights of planes flying over the leading armored elements. For controlling the air support, tactical air control parties were assigned as follows: two to the Guards Armored Division, two to the 43d Infantry Division, one to the 50th Infantry Division, and one to Headquarters, 30 Corps. Tactical air control parties were to drop with the airborne divisions and would be netted with the the Second Army Headquarters. The 30 Corps was to monitor this net so as to be able to impose a veto on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requested missions if such appeared to endanger advancing 30 Corps troops. As to air-ground recognition signals, arrangements were made for the use of cerise fluorescent panels, yellow smoke, and mann beacon lamps.

g. The artillery support for the break-out was to consist of a rolling barrage ahead of the Guards Armored Division, fired by the 30 Corps artillery of 15 light battalions, and four 155-mm gun battalions.

THE GUARDS ARMORED DIVISION PLAN

The plan for the advance of the Guards Armored Division was to have the 5th Guards Armored Brigade, consisting of the 2d Armored Grenadiers, the 1st Motor Grenadiers, and the 2d Armored Irish Guards, and the 3d Infantry Irish Guards, lead the advance. It would be followed by the 32d Guards Brigade, consisting of the 1st Armored Coldstream Guards, the 5th Infantry Coldstream Guards, the 2d Armored Welse Guards, and the 1st Infantry Welsh Guards. The two brigades would double bank on the road to Valkensvaard as soon as possible. It should be noted that each of these brigades was made up of two tank battalions and two infantry battalions, which would operate in groups, each consisting of a tank battalion and an infantry battalion.

COMMUNICATIONS

a. For liaison purposes and to facilitate the juncture five liaison detachments were provided by the 101st Airborne Division to operate with the leading elements of the Guards Armored Division. Each of these detachments contained an SCR 300 radio set. On 16 September, the day before D-Day, three parties reported to the 5th Guards Armored Brigade, which was to lead the advance, with radio sets which were out of order. Unsuccessful efforts were made to repair these sets before H-hour. Thus, the brigade attacked the next day without some of its most important communication links with the 101st Airborne Division.

b. Three nets were established between Second Army, 30 Corps, and the British Airborne Corps.

c. One net was established between 30 Corps, British Airborne Corps, 101st Airborne Division, and Second Army. Two British radio operators were attached to the 101st Airborne Division to operate on this net.

d. One net was established between 30 Corps, Guards Armored Division, 101st Airborne Division, 82d Airborne Division, and the 1st British Airborne Division. The 101st Airborne Division sent one SCR 193 set with US operators to 30 Corps to operate on this net. Two US operators were sent to the Guards Armored Division to operate a set provided by the Guards Armored Division in this net.

c. US operators were provided to operate five radio sets in a net between Division Artillery, Guards Armored Division, and the three light battalions and the medium battalion. Fire control sets in the airborne division were to be prepared to enter this net as required.

THE ATTACK

a. 17 September.—At 1310, the Commander, 30 Corps, saw that the airdrop was going according to plan and so ordered the Guards Armored Division to attack at 1435. A rolling artillery barrage, covering 1,000 yards on each side of the road to Eindhoven, was fired for 20 minutes. This was accompanied by eight Typhoons attacking every five minutes for 35 minutes, followed by further squadrons attacking targets designated by tactical air control parties with the Guards Armored Division. The attack of the Guards Armored Division was led by the Irish Guards Group of the 5th Guards Brigade. Within the group, the attack was led by a company of tanks followed by a company of tank carrier infantry and then a company of cavalry which was to fan out to the flanks as soon as the break-out had been made.

As soon as the artillery and air concentrations were finished, several well-sited German anti-tank guns came to life. They let the leading tank company pass by and then opened up on the second company, knocking out eight tanks very quickly. To eliminate those guns, the tanks sprayed every hedge and the infantry went in to mop up. By 1500, the leading company of tanks had crossed into Holland and encountered a force of about 200 infantrymen supported by several self-propelled anti-tank guns. A number of British tanks were lost in attempting to force a way through this resistance. Therefore, support was requested from the "column cover" Typhoons and from medium artillery. This fire, with a ground attack succeeded in overcoming the resistance and by 1815 the leading elements had reached Valkensvaard where they coiled up and prepared to resume the attack the next day. In the town, a British officer, by using a Dutch civilian telephone, was able to call the German commander in Eindhoven and, pretending he was a German, ordered that the troops in the vicinity of Valkensvaard be withdrawn. The next day this same telephone line was used to contact the 101st Airborne Division.

The 50th Infantry Division positioned itself to hold the bridgehead which it did against several determined enemy counterattacks, including two battalions of the 9th SS Panzer Division whose presence in the area was a complete surprise. Two battalions of the 50th Infantry Division advanced in rear of the Guards Armored Division with the mission of mopping up.

The enemy positions had been much stronger than expected and the Guards Armored Division had to fight vigorously to effect the break-through. However, the over-all situation was excellent. The airborne and ground attacks had gone according to plan and complete surprise had been achieved. 30 Corps was ready to resume the advance in any order determined by circumstances. The 43d Infantry Division was ready to pass through the 50th Infantry Division and follow the Guards Armored Division.

b. 18 September: During the night of 17-18 September, the Germans effected orderly withdrawals to positions designed to delay the advance of the British along the one good road to the north. The very poor terrain on each side of this road greatly restricted deployment of the advancing armored forces and favored the defense.

The Guards Armored Division was directed to continue on its original mission. The 50th Infantry Division was directed to continue to hold the bridgehead over the L'Escaut Canal and to keep the axis of advance open between the bridgehead and Valkensvaard. The 43d Infantry Division was directed to be prepared to send one brigade group to be attached to the Guards Armored Division if the latter encountered serious opposition requiring the use of infantry.

The advance was resumed at 0600 and leading elements continued to meet considerable enemy opposition particularly from Panther tanks and from infantry making good use of the woods which lined each side of the axis of advance. The cavalry reconnaissance company on the right was held up by enemy established to the east of Valkensvaard. The company on the left was able to advance and reached positions to the west of Eindhoven where contact was made with enemy paratroopers.

Aalst was cleared late in the morning. At 1100, reports were received from civilians that Eindhoven was firmly held by the Germans. The commander of the Irish Guards Group, leading the advance, therefore decided to by-pass the town to the west. This was done and at 1700 it was reported that Eindhoven had been secured and that elements of the 101st Airborne Division had linked up with the Irish Guards on the north of the town. The Irish Guards continued their advance and reached the south bank of the canal just south of Zon, where the bridge was found to be blown.

The 32d Brigade had moved out in the morning along the road east of Valkensvaard. After meeting considerable resistance all during the day it finally reached a point just south of Geldrop by nightfall.

One battalion of the 50th Infantry Division moved up to occupy Valkensvaard. The remainder of the 50th Division continued to hold the bridge across L'Escaut Canal against repeated enemy attempts to eliminate the bridgehead. Here we see examples of the support rendered by an infantry division to the advance of an armored division. The 50th Division now passed to the control of 8 Corps as it was decided that 30 Corps should be relieved of the responsibility of protecting the Escaut bridge and the axis of advance.

The Guards Armored Division immediately commenced construction of a bridge over the canal south of Zon so as to be able to continue its advance by first light on the 19th. The bridge at Grave was reported to be held intact by the 82d Airborne Division. The bridges at Nijmegen and Arnhem were reported to be intact but not yet secured.

On the right, 8 Corps, after very stiff fighting, had established a small bridgehead over L'Escaut Canal in the vicinity of Lille. On the left, 12 Corps had established another bridgehead over the canal, and by nightfall had two brigades on the north side.

c. 19 September: At 0615, the 5th Guards Brigade got off to a good start, passing over the bridge which had been constructed during the night. By 0700, leading elements passed through Veghel and by 0830 had crossed the Maas River over the Grave bridge. The 32d Brigade followed closely behind the 5th Brigade. By 1400, patrols of the division cavalry had reached the Waal River and the 5th Brigade had made contact with the 82d Airborne Division and was concentrated south of Nijmegen which was still firmly held by the 9th SS Panzer Division. The bridge was still intact but prepared for demolition with the south end held by the Germans. It was discovered later that the lead wires of the demolitions had been cut by a Dutch partisan which prevented the Germans from blowing the bridge.

At 1500, an attack was launched by the Guards Armored Division and the 82d Airborne Division to clear the bridge. The attack was led by the Grenadier Guards who attempted to rush right through to the bridge with their tanks. However, the enemy had several well emplaced anti-tank guns, pillboxes, and strong points at the south end and this tank attack was repulsed with the loss of a number of tanks. Then an attempt was made to by-pass some infantry around the strong points but this was also unsuccessful. By nightfall, it was clear that the attack had failed.

At 1900 a strong German tank-infantry-artillery attack was launched against the British axis of advance near Zon. This attack was successfully held by British tanks and elements of the 101st Airborne Division. Other battalion strength German attacks were made at other points along the axis, none being successful in cutting the line of communications but necessitating the use of 30 Corps troops for its defense.

The 8 and 12 Corps had made little progress over the poor terrain and against a determined enemy. Therefore, they were not yet able to perform their missions of protecting the 30 Corps axis of advance.

d. 20 September: On 20 September, the situation became more critical. It was imperative to seize the bridge over the Waal, either by direct assault or by making an assault river crossing. The enemy was building up a strong force in the Reichswald Forest and was already threatening the 82d Airborne Division from the east. It was vital to break through to relieve the 1st British Airborne Division north of Arnhem whose situation at this time was very uncertain but known to be acute.

During the night, SS troops from Arnhem reinforced the Germans holding Nijmegen and took up strong positions in the houses in the town. At 0800, another strong enemy attack based on Helmond was launched against the line of communications. This attack succeeded in cutting the axis but by 1100 attacks by British tanks and the 501st Parachute Regiment of the 101st Airborne Division reopened the road so that traffic could be resumed. During the night, the German air force heavily bombed Eindhoven causing further delay in the progress of the supply trains. Thus, to maintain the impetus of the 30 Corps attack and to insure a buildup of fighting forces, all southbound traffic except ambulances was stopped and certain units were ordered off the road in order to enable fighting troops and supplies to get through to Nijmegen.

Responsibility for the Nijmegen bridge area was taken over by the Guards Armored Division from the 82d Airborne Division and the 32d Guards Brigade was placed in support of the 82d Airborne Division to help defend the east flank. The 43d Division was ordered to concentrate in the Grave area and prepare for an assault crossing of the Waal River.

The plan for the resumption of the attack to seize the bridge, made by the division commanders of the Guards Armored and the 82d Airborne Divisions during the night, was as follows: The 5th Guards Brigade was to take over the mission of clearing the town of Nijmegen and drive straight for the bridge. The 504th Parachute Regiment would make an assault crossing over the Waal to the west of the bridge and then move down the north bank to the north end of the bridge.

At first light, the Grenadier Guards proceeded with the clearing of the town. It was a laborious process, involving fighting from house to house against stubborn enemy resistance. Meanwhile, preparations were made for the crossing of the river to the west.

At 1500 the assault commenced. With very severe casualties, small elements of the leading waves succeeded in crossing in boats and by swimming and established a small bridgehead in the face of heavy enemy fire. Following waves increased the bridgehead and finally at 1800 the advance east began. At 1845 a report was received that the paratroopers had reached the northern end of the bridge. The Grenadiers, encouraged by this report, again attempted the rush tactics which had failed the day before. This time, a small force of tanks, infantry, and engineers succeeded in crossing the bridge and gained contact with the Americans on the far bank. The position was strengthened by tanks and infantry of the Irish Guards Group and by 2015 a small but firm bridgehead was established.

During the night, fighting continued on both banks of the river and in the town and it was clear that much had yet to be done to completely eliminate the enemy from Nijmegen. However, one of the most important bridges in Europe and one of the most vital to this operation had been captured in the face of determined enemy resistance by the courageous coordinated actions of the Guards Armored and the 82d Airborne Divisions.

8 Corps advanced almost to the Dutch border. On the left, 12 Corps continued its advance to reach the line of the road running southwest from Eindhoven. It can be seen that the progress of these two corps was still insufficient to properly protect the flanks of the 30 Corps line of communications.

e. 21 September: During the morning, the Welsh Guards, which had been guarding the Grave bridge, were relieved by elements of the 43d Infantry Division and moved north to rejoin the Guards Armored Division north of the Waal. Then the 130th Brigade of the 43d Division relieved the 5th Armored Brigade of the responsibility of guarding the Nijmegen bridge. Therefore, the Guards Armored Division, less the Coldstream Guards Group which was still in support of the 82d Airborne Division, prepared to resume its advance to Arnhem.

At 1300, the Irish Guards Group began to advance. Strong enemy forces were dug in south of Elst and there was a strong anti-tank screen of 88-mm guns, Tiger tanks, and 105-mm guns just north of the bridge. The terrain was completely unsuitable for armor, necessitating an advance along the road on a one-tank front. Furthermore, this road was about six feet above the surrounding countryside, making the British tanks easy targets for the enemy anti-tank guns. The artillery support was restricted to firing by battery as the ammmunition supply was very slow and limited because of the frequent interruptions in the line of communications by enemy counterattacks. In addition, the communications between the tactical air control party with the Irish Guards Group and the air support failed. Thus, the assistance of the Typhoons could not be obtained at a very critical time. Attempts were made to by-pass the enemy positions but these were unsuccessful due to the nature of the terrain. At nightfall, the situation had changed only slightly since morning.

The 8 and 12 Corps had continued their slow advances and had now reached a line roughly east and west through Eindhoven. They reported that the enemy was stubbornly defending every village and refusing to give ground until pushed out.

f. 22 September: The missions now assigned to the divisions of 30 Corps were as follows: The Guards Armored Division was ordered to maintain its present positions and rest for 48 hours. It was also directed to conduct reconnaissance to both flanks from the main axis. The 43d Infantry Division was ordered to pass through the Guards Armored Division, occupy the Arnhem bridge and make contact with the 1st British Airborne Division. The 69th Infantry Brigade of the 50th Infantry Division, now back under 30 Corps control, was to relieve the 130th Brigade of the 43d Infantry Division from its task of defending the Nijmegen Bridge.

At first light, patrols of the 2d Household Cavalry Regiment of the Guards Armored Division moved out under cover of an early morning mist and reached the lower Rhine near Driel by 0800 and established contact with the Polish Parachute Brigade. From these positions they were able to send back very valuable information and also were able to direct artillery fire in support of the badly pressed British paratroopers north of the river. At another period during the day, they observed a German steamer towing four barges. They sent back a message that they were maneuvering into position to engage. Shortly afterwards came the message, "steamer damaged, three barges sunk." Back went the message from the Guards Armored Division, "congratulations on brilliant naval victory. Splice main brace." They did.

Meanwhile, at 0830, the 43d Infantry Division attacked to break out of the bridgehead. The fighting was very severe making the progress slow. By 1600, the advance had reached only to the 67 Grid line. It was now decided to send a force by a westerly route to link up with the Poles in the vicinity of Driel and establish themselves on the south bank of the Rhine. Infantry were mounted on tanks and a combined force moved via a westerly route and reached the river by 2000. Other troops were moved up behind this column and DUKWs, loaded with ammunition and medical supplies, were sent up to the river in the hopes they could cross and deliver these supplies to the 1st Airborne Division.

At 1300, an enemy attack cut the main axis between Uden and Vegrel. This attack was delivered by German troops from the west. The 32d Guards Brigade of the Guards Armored Division was sent back immediately to reopen the road. By last light, the Guards Brigade had made contact with the enemy south of Grave but no decisive action had taken place. Here is illustrated the necessity of using a portion of an exploiting force to protect the lines of communications when this task should better be performed by following troops. The requirement for a rapid advance by the 8 and 12 Corps on the flanks, which did not materialize, is again demonstrated.

g. 23 September: The problem now confronting 30 Corps was first, to seize Arnhem, second, get reinforcements and supplies to the 1st Airborne Division, and third, to keep the line of communications open. With regard to the protection of the line of communications, Second Army had directed 8 Corps to relieve 30 Corps of this task as far north as Grave. It was obvious that the only way to relieve the 1st Airborne Division elements on the north bank of the Rhine was to make an assault crossing of the river. To do this required strong artillery support. Therefore, it was extremely important to keep open the line of communications in order to bring up the badly needed ammunition. It was therefore decided that as soon as the road was reopened, priority would be given to the movement of ammunition. Bridging equipment also had to have a high priority.

At first light, the 32d Guards Brigade, in conjunction with the 101st Airborne Division, commenced operations to open the road. By 1530, success was achieved and traffic was resumed, though under periodic enemy shelling from enemy positions on the flanks.

The 43d Infantry Division continued to improve its positions on the south bank of the Rhine and also launched an attack against the strong enemy positions in the vicinity of Elst from the west. By 2200, elements of the division were fighting in the western edge of the town and it was apparent that it would be a slow process of house to house fighting to clear the town.

The Guards Armored Division, less the 32d Brigade, engaged in reopening the line of communications, was occupied in protecting the Nijmegen bridgehead against heavy enemy pressure from the east, north of the Waal.

h. 24 September: During the night of 23-24 September, some supplies and 250 men of the Polish Parachute Brigade were ferried across the Rhine and about 150 of these were able to contact the 1st Airborne Division.

On the 24th, the 43d Infantry Division continued its attacks to clear Elst. By nightfall, the town was clear except for some snipers concealed in the houses.

The Welsh Guards Group of the Guards Armored Division continued to attack to capture Bemmel. So determined was the enemy in his resistance that by dark the Guards were still short of their objective.

The enemy again cut the line of communications south of Veghel and by dark the road had not yet been reopened greatly intensifying the critical supply situation.

i. 25 September: During the night of 24-25 September, infantry of the 43d Infantry Division forced a crossing of the Rhine and linked up with the 1st Airborne Division. However, during the 25th it became apparent that the bridgehead held by the 1st Airborne Division was no longer tenable due to heavy casualties and shortage of supplies. It was, therefore, decided to evacuate the 1st Airborne Division to the south bank during the night of 25-26 September. The 43d Infantry Division was assigned the task of carrying out this evacuation. It was then to proceed with the complete securing of Elst, protect the corps east flank from Elst to the Rhine and the west flank between the Waal and the Rhine Rivers. The Guards Armored Division was to continue its attack to capture Bemmel and then be responsible for the protection of the corps east flank between the Waal and Elst. The 32d Brigade was to continue to operate to keep the line of communications open.

In compliance with these orders, the attacks on Elst and Bemmel continued and both towns were cleared by evening when the enemy withdrew to the north. The elements of the 1st British Airborne Division were withdrawn during the night.

The line of communications was still not open but the 50th Infantry Division reported that the road should be clear by the morning of 26 September. Elements of the 32d Guards Brigade contacted forces of the 11th British Armored Division of 8 Corps in the vicinity of St. Anthonis. Thus, the 30 and 8 Corps were finally linked up. 8 Corps had by now captured Gemert, Helmond, and Duerrne.

Operations were now conducted by Second Army to consolidate the gains which had been made and to prepare for further operations toward the heart of Germany.

CONCLUSION

These conclusions will be discussed only insofar as they pertain to the operations of 30 Corps. No conclusions will be advanced concerning the airborne operations.

a. Operation Market-Garden is considered to have been ninety per cent successful. Had 30 Corps been able to establish contact with the 1st Airborne Division sooner, the chances of complete success would have been greatly increased.

b. In the initial break-out, the principle of effecting a gap with infantry divisions, thus creating the opportunity for an exploitation by a relatively undamaged armored division, was not adhered to. This means of making the break-through had been discussed in the planning stage but was not adopted. It is questionable whether an infantry division could have made the break-through any faster than did the Guards Armored Division. However, the armored division did suffer casualties in both personnel and tanks in creating the gap, which consequently reduced its effectiveness for the later very important operations. Had the gap been created by infantry divisions, the armored division would have been at greater strength for the fierce fighting yet to come and for the advance to a juncture with the 1st Airborne Division.

c. The frequent cutting of the line of communications by the enemy demonstrated that an exploiting force cannot make a deep thrust into strongly defended enemy territory and be properly maintained for continued operations unless it is closely followed by sufficient supporting troops to protect the lines of communications and insure an uninterrupted flow of supplies. It was planned that the 8 and 12 Corps would advance on each flank of 30 Corps thus protecting its axis. However, the nature of the terrain and the stiff enemy resistance rendered this impractical. Hence it was necessary for the Guards Armored Division to use some of its own troops for the protection of its axis when these troops could have been of great importance in the attacks to cross the Waal River and reach Arnhem.

d. After-action reports of Operation Market-Garden indicate that the communications did not operate entirely satisfactorily. As shown in the beginning of this article, adequate provisions had been made to insure contact between the relieving ground forces and the airborne troops. Communications between 30 Corps and the 82d and 101st Airborne Divisions were generally satisfactory but not so with the 1st British Airborne Division. Contact with the 1st Airborne Division was established only through a medium artillery battery in the vicinity of Nijmegen. Artillery communications with the 82d and 101st Airborne Divisions were generally satisfactory. The air-ground communications worked very well except for the one time north of the Waal.

e. The employment of "rush" tactics by tanks should be noted. It is true that the first time the Guards Armored Division attempted to rush through to the bridge at Nijmegen, the attack was repulsed. However, the next day the same tactics were successful. Later, when the 43d Infantry Division was attacking north of the Waal, very little progress was made by orthodox cautious tactics. So again a rush, employing tanks loaded with infantry, was made and the lower Rhine was successfully reached. Thus is illustrated the principle of aggressiveness and its effectiveness when used at the proper time.

f. In spite of the failure to completely protect the line of communications, the principle of following an armored division with infantry was shown in several instances. Elements of the 43d Infantry Division and the 50th Infantry Division successively relieved units from the Guards Armored Division left as security detachments at bridges or road centers. The 101st Airborne Division also supported the advance of the armored division by its seizure of important bridges and its operating to protect the main axis. The trouble was that there were not sufficient troops to do a full job particularly when the flank corps were advancing so slowly.

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TANKS AND ARTILLERY

CARDED

by Major L. A. Hedges★

DURING the latter stages of the late war, in the ETO, an assignment of an indirect fire mission in support of artillery was enough to give most tank unit commanders a fit of the horrors, not to mention the agonized cries from the very soul of the artilleryman.

During the early phases of the war, in the ETO, hard on the heels of serious training in indirect fire methods, it is likely that most tank units would have welcomed such assignments. However, the rapid attrition of trained crewmen due to combat losses, and the ever-increasing number of reinforcements inadequately trained not only in the matter of indirect fire but also in direct fire, gave rise to exceedingly difficult problems in the performance of such missions.

Let us look at the development of the tank. Introduced in World War I, it gave rise to one of the most interesting if not the most remarkable evolutions of a military weapon since the advent and use of the British Congreve Rocket.

This evolution has waned and waxed for the past thirty years, receiving of necessity a tremendous impetus during World War II. This last upsurge has not yet spent itself. As is customary and normal during such rapid developments, tactical doctrines were subjected to the most active reconsideration by all military personnel directly or indirectly affected. Under such speculation it is only natural that many faulty and false conceptions of the use of tanks arose and have persisted in spite of experience during World War II.

The original conception, design, and construction of the first tanks are not so widely known as might be expected. The only purpose of the first tank was to carry a soldier and a gun forward of the front line trenches far enough for him to bring direct fire on the enemy automatic weapons without himself being cut down by their fire. It is even questionable whether the original designers imagined the full extent of the tremendous shock action which was achieved then and which since has played an important role in tank tactics.

From this then ambitious program the tank developed step by step in armor, armament, power supply, and carriage as the enemy and the progress of arms found means to overcome each improvement.

The improvement in armament and carriage especially gave rise to the changes in tactical doctrine. With the mounting of heavier caliber guns in the tanks, their use or contemplated use as artillery became a fond vision which reached its height during the last years of training in World War II.

Despite the extensive wartime training given to tankers in the methods of indirect artillery fire and to the artilleryman in direct fire work, no wide use was made of either. In the case of the tanks it was due not so much to their limited ability to act as artillery as to their need for employment in their primary role. Further, the relatively large preponderance of artillery obviated the use of tanks as such in any considerable strength. There was always more artillery than ammunition.

Nevertheless, tanks *did* reinforce artillery or were fired as artillery by themselves. More frequently employed as artillery were tank destroyers. Artillery was also employed in direct fire, although essentially in a defensive role.

The feasibility of using tanks as artillery, of stripping them of their intended mobility and armor and relegating them to a class with towed weapons, has been discussed with much vehemence and ardor by two classes of tankers: those who approach the problem with reason and intelligence, and those who, blindly prejudiced, admit of no use for tanks except direct fire.

Similarly, the artilleryman is not above reproach. In him you will find the same reason and lack of reason, prejudice and lack of prejudice, not only to the use of tanks as artillery but also to the artillery as a direct fire weapon.

With respect to our *current* tanks, the question, long a subject of frequently bitter controversy, is not *whether* tanks should be employed as artillery but *to what degree* these weapons in their present form *can* be employed successfully, if need be, on missions for which they were not primarily designed. *Future* design of tanks, based on changes in the methods of accomplishing the missions of armor, may well eliminate any possibility of the employment of tanks as artillery.

The old merry-go-round of adding more armor to the tank to offset better enemy guns followed by further enemy weapon improvement to offset the new armor can go only so far. The answer lies first in the *mission* of armor and then in its *design*. No one will deny the remarkable improvement in the design of tanks as evidenced by the difference between the old medium tank M3, the "General Grant," and the current M26 tank, the "General Pershing." However, even this evolution does not meet the needs of our current missions to say nothing of possible future changes in missions and

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methods of carrying them out. Anyone who, as a boy, fired a .22 caliber rifle at a mud turtle will appreciate that the hull "design" of the turtle should be incorporated in our tanks. However, so long as our present tank equipment has the ability to fire as artillery, regardless of how limited that ability may be, our "know-how" should be complete.

It is on this premise that we discuss the techniques by which these weapons can be so employed.

The decision to employ tanks on an indirect fire mission in support of artillery, or as artillery by themselves, is, of course, a function of command.

The commander is influenced by every factor which may develop during the course of combat, regardless of the level of command or the scale of operation involved. His decision represents a considered judgment based on the probable success or failure of the operation after weighing the relative worth of the tank unit as reinforcing artillery or as a unit in its primary role.

Evaluation of this relative worth is a process which involves the mental capacity of the commander and his staff, the accuracy of intelligence of the enemy, the logical situation, and many factors bearing on the current effectiveness of the tanks as well as the artillery. These last are concerned with (1) current tank commitment, (2) present tank location, (3) physical condition of tanks and tankers, (4) personnel strength of the tank unit, (5) adequacy of artillery and others of similar nature.

These are normal considerations which influence the commander in his decision. Equally important but not always weighed in this process of evaluation is a regard for the technical or physical ability of the tank to influence the action once it has been committed. There is no doubt of that ability when the tank is employed on its normal direct fire mission. If employed on indirect fire missions there *is* doubt as to its ability. The strength of this doubt should be a potent element in the ultimate decision to employ the tank indirectly. This strength of doubt, or the lack of it, depends on the indirect mission intended.

In order that this doubt may be evaluated in turn we must examine closely the technical or physical limitations of the tank when firing indirectly. These limitations are (1) inflexible trajectory and dead space, (2) carriage cant, (3) tube wear, (4) incomplete integration of tank unit with artillery due to above three limitations, (5) availability of tank calibers suited to missions intended, (6) state of training of tank crewmen.

The following discussion of these limitations is undertaken objectively with a view to disclosure of the maximum ill effects which can be expected. It should be realized that the tank unit commander, if committed to indirect fire missions, must seek to minimize the effect of the limitations, whether inherent in the tank or brought about by other causes such as siting, organization for combat, type of mission assigned, type of ammunition available, or inadequacy of the crews.

TRAJECTORY AND DEAD SPACE

A comparison of tank gun trajectories with those of artillery pieces of light and medium calibers is sufficient. Only a limited comparison is made with heavy artillery guns and howitzers.

Consider first the two most common weapons of the artillery and the armor: the 105-mm artillery howitzer and the 76-mm tank gun. An arbitrary range of 5000 yards has been selected for comparative purposes.

Whereas the trajectory of the 76-mm gun (2700 feet per second) is inflexible or relatively so, at 5000 yards range (or at any range, for that matter), the trajectory of the 105-mm howitzer is readily changed by a variation in the powder charge and a consequent increase or decrease in the elevation at which the howitzer is fired. From a maximum ordinate of 692 feet with charge 7 at 5000 yards, the trajectory can be lifted to a maximum ordinate of 2702 feet with charge 3 at the same range, with a consequent increase in the angle of fall from approximately 213 mils (charge 7) to approximately 675 mils (charge 3).

The angle of fall for the 76-mm gun remains relatively constant at approximately 106 mils at 5000 yards. Although time of flight favors the 76-mm gun, it is not generally a decisive factor.

These are academic data from firing tables prepared for standard conditions. However, it can readily be seen that while the trajectory of the 76-mm gun can be considered satisfactory for indirect fire missions on normal terrain, it is evident that because of its inflexibility, it cannot meet the varying and precise requirements of the artillery. The degree to which the 76-mm gun can reinforce artillery with indirect fire, considered from the viewpoint of the trajectory alone, depends on the interpretation of the phrase "normal terrain." Its efficiency as an indirect weapon at short and medium ranges is directly proportional to the flatness of the terrain.

It is true that the 76-mm gun trajectory can be raised and made to approach that of the 105-mm howitzer by the use of ammunition of lower muzzle velocity (1550 feet per second). The trajectory can also be improved by firing the tank from a pit or a reverse slope; but severe limitations in employment, laying, adjusting fire, and firing impose themselves, due to the construction and design of the tank. These limitations, discussed later, tend to offset the somewhat questionable advantages gained by such siting.

Other less numerous weapons in armor, such as the 75-mm M6 gun in the M24 light tank and the 90-mm gun in the M26, meet the artillery requirements in varying degrees.

The 75-mm HE shell, M48, admitted by those who fired it extensively during the late war to be superior to the 76-mm HE shell in effect against normal HE targets, approaches the requirements of the artillery more closely than others, excepting the 105-mm shell, M1, fired by the M45 tank. However, it too (75-mm), is inflexible in its trajectory. At 500 yards, using supercharge (HE shell, M48, 1980 feet per second) the 75-mm M6 gun effects a trajectory with a maximum ordinate of 475 feet and an angle of fall of 161 mils.

The 75's trajectory for indirect fire use can be improved by utilizing normal charge ammunition (1520 feet per second) and reduced charge ammunition (960 feet per second). In the latter case, at 5000 yards the maximum ordinate is 1499 feet with an angle of fall of 525 mils. However, when the tank is employed as reinforcing artillery in combat, the availability of normal and reduced charge shell may be questionable.

From the standpoint of trajectory alone, the 90-mm gun in the M26 tank is probably the least suited to indirect fire work. At 5000 yards with shell HE, M71 (2700 feet per second) its trajectory has a maximum ordinate of 210 feet with an angle of fall of 69 mils.

The best suited tank weapon for indirect fire missions is, of course, the M45 tank mounting the 105-mm M4 howitzer (assault gun) or the M4A3 tank mounting the 105-mm M4 howitzer. These tanks can meet all artillery requirements, with the exception of high angle fire (maximum elevation of the M45 or M4A3 is 630 mils), without a longitudinal tilt in the carriage.

It may seem we have made a great to-do about trajectories. However, these considerations of tank weapon trajectories are, of course, relative to the standard of artillery weapons. We cannot conclude that these trajectories are wholly unsatisfactory, but we can conclude that they are either more or less suited to indirect fire work from the artillery standpoint, meaning effect on a wide variety of targets, many approaching the inaccessible.

It is readily seen that where a tank could fire an indirect mission successfully against a town having vertical profiles or against other targets in fairly level terrain, it would fail to secure effect when fired at defiladed targets requiring manipulation of the trajectory. The alternative to manipulation of trajectory is variation in siting for range, which introduces undesirable control problems. More practically, assignment of separate tank targets within capabilities should be made.

All tanks weapons are better indirect fire weapons at extreme ranges than when employed at short or medium ranges from the standpoint of reduced dead space. However, we must compromise because of inaccuracies in firing at those ranges, especially if the tank is canted in either plane. Further, dispersion at extreme ranges is excessive.

CARRIAGE CANT

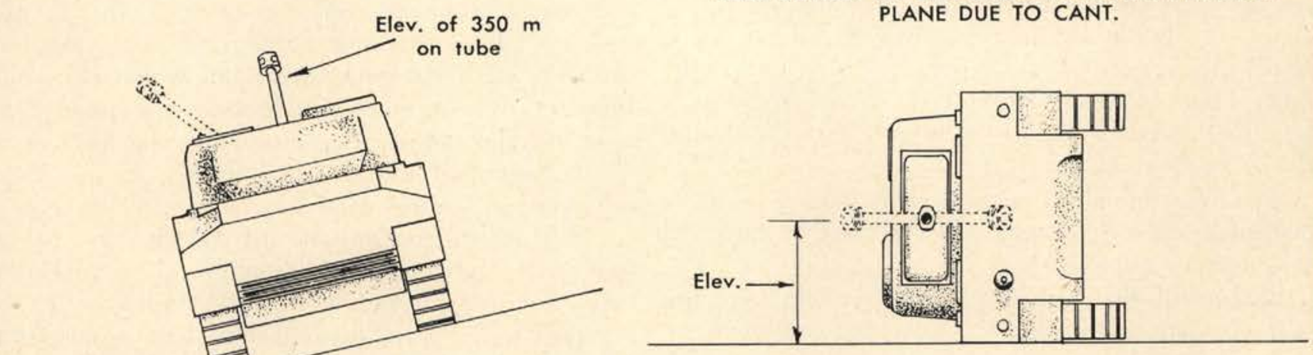
In indirect fire work the tank with its present equipment is mechanically and technically less efficient than the artillery piece, regardless of caliber or carriage.

While the tank, in indirect fire, can be precisely laid and shifted in deflection and elevation with the azimuth indicator and the elevation quadrant on level ground, there is no provision in these instruments to mechanically or automatically overcome carriage cant. The artillery piece can cross-level its sights and fire accurately under most conditions of carriage cant. This is not true of the tank. If the trunnions are canted and the tank is called upon to make large shifts from its base deflection, the error in deflection and range is serious enough to compel additional corrections by time-consuming mathematics.

The tank turret and tube can be likened to a saucer with a spoon in it. If the saucer is level on a table it can be moved in a circular manner around its center without changing the distance from the spoon handle to the table. Thus a tank turret with level gun trunnions can be traversed through any distance without loss of elevation of the tube. If however, the saucer, or the turret, is *not* level and the piece is traversed, a loss or gain in elevation is effected depending on whether the movement is down or up the incline. An attempt to restore the original elevation by laying it off with a quadrant after the traverse is made will not be accurate due to measurement in a false vertical plane.

To be explicit, assume a situation in which the tank is canted laterally. The tube is elevated until the quadrant reads 350 mils. If the turret is traversed, let us say,

ILLUSTRATION OF ELEVATION IN A FALSE VERTICAL PLANE DUE TO CANT.



Rear View of Tank — Trunnions Canted.

Front View of Tank on Side.

Comparison of Trajectories of Tank Weapons With Artillery 105-mm Howitzer, M4,
At Range of 5000 Yards

	105-mm How M2, M4 HE Shell, M1		*75-mm Gun, M6, HE Shell, M48*		*76-mm Gun, M1 and Mod, HE Shell, M42A1*		*90-mm Gun, M1, HE Shell, M71*	*Tank, M45, 105-mm How, M4, HE Shell, M1*	
	Charge 7	Charge 3	Super	Reduced	MV 2700	MV 1550		Charge 7	Charge 3
Range	5000	5000	5000	5000	5000	5000	5000	5000	5000
MV, fps	1550	780	1980	960	2700	1550	2700	1550	780
Elevation, mils	157	600	103.2	357.1	60.4	200.4	47.7	157	600
Maximum ordinate, feet	692	2702	475	1499	299	941	210	692	2702
Angle of fall, mils	213	675	161	425	106	295	69	213	675

800 mils to the left without disturbing the elevation handwheel, the actual elevation of the tube, with respect to its original position, will be lessened. (See sketch.) The bubble in the elevation quadrant (set at 350 mils) is then leveled by raising the tube. Although the quadrant reads 350 mils with the bubble level, the elevation of the tube will still be less than in its original position, and the greater the shift the larger the error.

This can be explained by assuming the same situation as above, except that we increase the cant of the trunnions until the tank is on its *side,* level fore and aft. With the elevation quadrant set at 350 mils the bubble will be level, provided the tube is held in place by the locked turret. (See sketch.) Any movement of the *elevation* handwheel will now move the tube in a horizontal plane rather than a vertical plane. The loss in actual elevation from the tank's original position cannot be corrected, no matter how great the movement of the tube by the elevation handwheel. The elevation of the tube is only the distance from the ground to the tube. Thus the errors introduced by cant are distributed throughout 1600 mils. The greater the cant, and the larger the shift, the greater the error.

The longitudinal tilt or slope of the tank also causes deflection and range errors which cannot be corrected by automatic means.

Because of these reasons, unobserved indirect fire by tanks may be unreliable. The amount of error can be minimized by utilizing a larger number of check points in the target area, thus reducing the size of shifts.

An effort to secure greater ranges by giving the tank a longitudinal tilt in a pit or on a reverse slope results in increased errors due to cant when the turret is traversed in deflection.

It is obvious that these carriage cant errors are nonexistent if the trunnions are level in both lateral and longitudinal planes. This is accomplished through careful siting of the tanks. To achieve accuracy each vehicle must be leveled in both planes either through selection of site, construction of platforms or digging level ground areas. The extent to which carriage cant and the resultant firing errors can be permitted depends on the mission assigned, keeping in mind the possibility of a sudden change in mission requiring greater accuracy.

Tube Wear

A matter of no small interest in firing tanks indirectly is the excessive tube wear which results from a large volume of rounds. The high velocities of tank cannon (2700 feet per second for 90-mm HE and 76-mm HE standard) effect great wear when fired in volume. This excessive wear can be reduced by firing reduced charge ammunition, which also would improve the trajectory and lessen dead space at low and medium ranges. This alternative, however, is not easily controlled, due to the probable scarcity of such ammunition during combat.

The artillery firing shells at a velocity of 1550 feet per second (charge 7 for 105-mm) dislikes continuous fires, due to great wear even at that relatively low velocity. Charge 5 for the 105-mm permits range variations generally from 2000 yards to 8000 yards. It was used extensively in the late war. It gives a muzzle velocity of 1020 feet per second, as compared to 2700 for the 90- and 76-mm tank guns.

In this element the 75-mm tank gun again shows its strength as in indirect fire weapon, with a muzzle velocity of 1980 feet per second for supercharge HE. Its normal and reduced charges, if available, effect muzzle velocities of 1520 and 960 feet per second respectively. Maximum ranges of 75-mm M6 tank gun vary from approximately 14,000 yards for supercharge shell to approximately 11,000 yards for normal charge and approximately 7000 yards for the reduced charge. Tube life, 75-mm M6—approximately 2000 rounds. Ordnance recommends changing the tube at 1000 rounds. The M6 is a lightweight tube designed for use in aircraft. Although not worn out at 1000 rounds, it has crystallized to the point where firing becomes dangerous.

Excessive tube wear in the tank weapon as a result of voluminous indirect fire in support of artillery reduces the tank's efficiency when released for its primary direct fire role.

ORGANIZATION FOR COMBAT—INDIRECT FIRE

The artillery organizes for combat with great care when its usual weapons are employed. However, during the late conflict this care was often not in evidence when tanks were used in their support. This casual use of tanks, without regard for their best usage, either was due to lack of understanding or more probably, nonavailability of suitable tank calibers.

The normal inclination of the composite force commander, artillery or otherwise, would be to secure the heaviest caliber tank weapon to support him indirectly unless he was possessed of a proper knowledge of their capabilities.

DIVISION DIRECT AND GENERAL SUPPORT ARTILLERY

Current tank calibers do not possess sufficient variation in their trajectories or weight of projectile to permit a separate discussion, either for direct or general support artillery of the division.

Obviously, the assault gun or 105-mm M4 howitzer, mounted either in the M26 medium tank chassis (M45 tank) or in the M4A3 medium tank, is the best tank weapon for reinforcement of direct support artillery, and of general support artillery within its range limitations. Although it may be hampered to some extent by carriage cant which cannot be removed by automatic means, and by its inability to fire high angle fire, the assault gun is desirable by reason of its ballistic similarity to the artillery piece.

Next to the assault guns, the 75-mm tank gun is most acceptable for employment with direct support artillery, and, as in the case of the 105-mm, of general support artillery within its range limitations. Its ballistic qualities and trajectory, especially with normal or reduced charge ammunition, make it better suited for this work than either the 76-mm or the 90-mm. However, the extremely short life (2000 rounds) of the 75-mm M6 tube makes its use inadvisable except in emergency.

The 76-mm and the 90-mm cannons have the range ability for divisional general support artillery. One would normally consider their employment as such over the 75-mm cannon except for considerations of dead space resulting from low angle of fall and inflexible trajectory.

Regardless of the caliber employed, let us emphasize again that hull and turret design preclude the elimination of errors due to cant of carriage. Thus, unobserved fire from these weapons may be erratic if not properly sited; i.e., as nearly level as possible.

In order of effectiveness in this category the tank weapons are listed thus: 105-mm assault gun; 75-mm M6 gun; 76-mm gun; 90-mm gun.

CORPS ARTILLERY

Generally speaking, tank weapons are not recommended for use in support of Corps Artillery because of the lightness of their caliber and the firing inaccuracies introduced at ranges consistent with Corps Artillery employment.

This statement may be subject to some modification depending on how Corps Artillery is sited and the targets assigned to the tanks. Aggressive use of Corps Artillery frequently sites it well forward, even in advance of divisional general support artillery. Corps Artillery may also be sited to the rear of divisional artillery. Forward siting is effected to bring long range counter battery, interdiction, harassing and destructive fires into play, as well as to provide strength to preparatory offensive fires.

The heavier calibers and longer range ability of Corps Artillery normally indicate the type of mission on which it will be employed, regardless of its siting.

The missions of Corps Artillery are inconsistent with the abilities of tank cannon in most respects. Weight of projectile and dispersion with resulting inaccuracies at long ranges operate to the disadvantage of the tank. Decreased dead space at long ranges operates to the advantage of the tank.

If tanks are used in support of Corps Artillery special consideration should be given to selection of targets suited to their caliber and at ranges which effect least inaccuracies.

The siting of Corps Artillery and the tank missions will have a bearing on which tank calibers should be used. In order of effectiveness the tank weapons are listed:

When corps artillery is sited to rear of divisional general support artillery	*When corps artillery is sited forward of divisional general support artillery*	
	Close and interim ranges	*Long ranges*
90-mm tank gun	105-mm Assault gun	90-mm tank gun
76-mm tank gun	75-mm gun	76-mm tank gun
75-mm tank gun	76-mm gun	
	90-mm gun	

A comparison of pertinent ballistic data for the 75-, 76-, and 90-mm guns firing at ranges from 1000 to

13,000 yards reveals their relative effectiveness. The 105-mm assault gun is superior to all within its range limits, except for a slight excess of dispersion.

RANGES FROM 1000 YARDS TO 13,000 YARDS

	75-mm Sh, HE, 48	*76-mm Sh, HE, 42A1*	*90-mm Sh, HE, 71*
Highest angle fall	1st	2d	3d
Least range dispersion	2d*	1st	3d
Most effective fragmentation	1st	3d	2d

These recommendations are made with the understanding that the type of target and mission assigned must be in keeping with effects desired. At long ranges accuracy must be sacrificed to limited dead space, while at shorter ranges volume of targets due to increased dead space is sacrificed to accuracy.

CONTROL OF FIRE AND ADMINISTRATION

It is generally agreed that maximum effectiveness of artillery is gained by massing it. Massing of artillery is effected through central control, the basic unit of which is the field artillery battalion fire direction center.

Two methods of controlling the supporting tank fire are available. Which method is employed depends on the efficiency and state of training of the supporting tank unit, and the mission of the artillery.

TANKS UNDER FIELD ARTILLERY FDC CONTROL

The first and generally more acceptable method from the tanker's viewpoint and probably from the artillery viewpoint is that of using the tank unit as an additional battery or batteries, under the control of an artillery battalion fire direction center.

The chief advantage to the tanker in this method is the utilization of the existing artillery observation, communication, and control systems, which frees the tanker for performance of maintenance during this period of relative inactivity.

We do not use the word "maintenance" lightly. During the early phases of the last war, if the tanker asked a composite force commander for release of a part of his tanks from the line for "maintenance" purposes, he was generally regarded with a cold and jaundiced eye. Until late in the war, many commanders of other arms had the general idea that so long as fuel and lubricants were available, the tank could run indefinitely. Only when some commanders lost their supporting tanks through lack of maintenance did they come to a realization of this necessity. *The large maintenance necessity in current tanks, due to their weight, low power, and complicated electrical systems, must be reduced in future tanks.*

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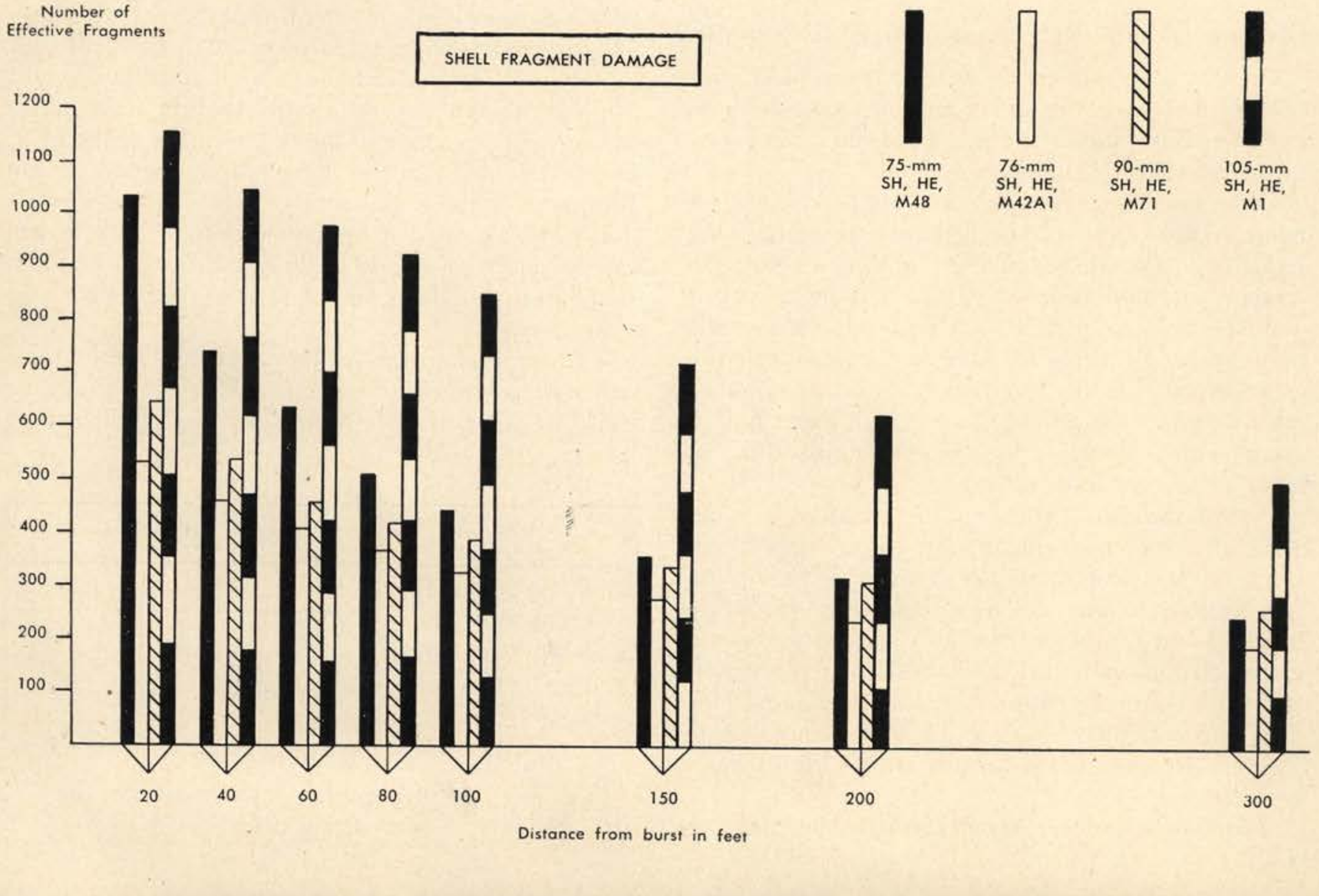
*The 75-mm holds No. 2 position with respect to range dispersion, but the difference between the 75-mm and the 76-mm dispersion patterns is 136 yards at 1000 yards, 48 yards at 6000 yards, and zero at 13,000 yards. All guns have severe dispersion at long ranges (see dispersion graph).

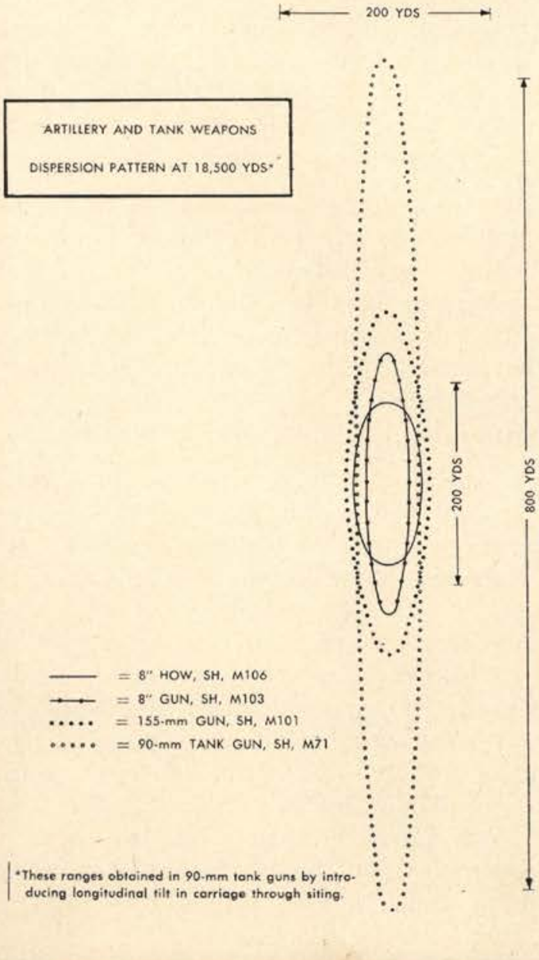


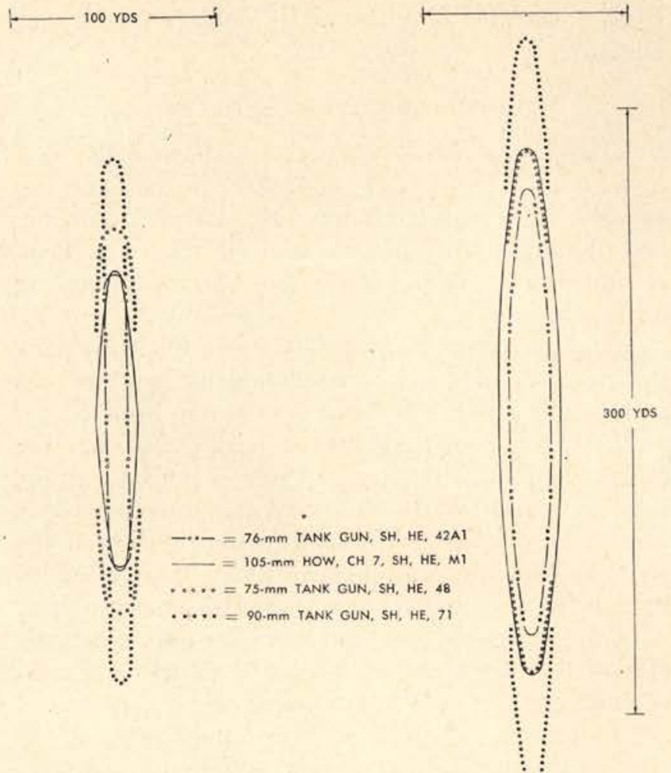
The maintenance of the tank's ability to fire its weapons and to be controlled or to control by radio are the two most important factors. Its mobility depends for the most part on its power supply, which did not fail as often as the more delicate mechanisms such as the radio, gyro-stabilizer, power traverse, and intercommunication systems.

Another prime factor in the maintenance of which we speak is personnel reclamation. The enervating effects of long periods of close confinement in a tank should not be underestimated. It is one thing to relieve yourself on the ground, even in your own foxhole; it is quite another thing to come out of a long engagement with a red ring on your buttocks from squatting over an empty shellcase; and of course, sleeping in a hole in the ground is much to be preferred to sleeping in a telephone booth.

DISADVANTAGES

The disadvantages in this method are concerned chiefly with accuracies of fire. We cannot disregard the previously discussed limitations in trajectory, siting, and carriage cant. No problems would arise if the supporting tank unit could be integrated completely with the artillery battalion and fired as an extra battery or batteries. However, this is not the case. Because of the tank's limitations it cannot be brought in on the target accurately in "fire for effect" on an artillery piece adjustment if any of the inherent tank limitations are in effect. This is particularly true of carriage cant. The tank can follow the artillery adjustment but due to shifts in faulty planes caused by "cant" its fire for effect will be inaccurate in proportion to the size and number of shifts.


200 YDS
ARTILLERY AND TANK WEAPONS
DISPERSION PATTERN AT 18,500 YDS*
200 YDS
800 YDS
= 8" HOW, SH, M106
= 8" GUN, SH, M103
= 155-mm GUN, SH, M101
= 90-mm TANK GUN, SH, M71
*These ranges obtained in 90-mm tank guns by introducing longitudinal tilt in carriage through siting.


100 YDS
300 YDS
= 76-mm TANK GUN, SH, HE, 42A1
= 105-mm HOW, CH 7, SH, HE, M1
= 75-mm TANK GUN, SH, HE, 48
= 90-mm TANK GUN, SH, HE, 71
5000 YDS RANGE
10000 YDS RANGE

I

DISPERSION PATTERN — ARTILLERY & TANK WEAPONS

This is especially true in surprise or unobserved fires. Observed "fire for effect" of the tank unit can be adjusted, if inaccurate, but the effect of a single accurate volume of fire will be lessened. Zone firing may compensate for some of these inaccuraries provided the factors of range, trajectory and dispersion are favorable.

TANKS AS AN INDEPENDENT UNIT

The second and probably less desirable method from the tanker's viewpoint is to fire the tank unit from its own fire direction center with the assignment of targets from artillery.

The disadvantages to the tanker in this method are numerous, and the over-all control of all fires is complicated. The tank unit must establish its own observation, communication, and control forward, as well as communication to higher artillery headquarters. Although a tank battalion's organic vehicles and personnel can be allocated to meet these needs, a company or lower unit will find it difficult without assistance. Regardless of the unit used, the problems involved are increased by lack of continuous training in this phase. Intermittent use of tanks as artillery is not conducive to a high degree of efficiency, notably due to attrition of trained or semi-trained crewmen during the intervals of direct fire employment.

Therefore, any method which utilizes a relatively constant system, such as the artillery net of observation, communications, and control, is most desirable and effective.

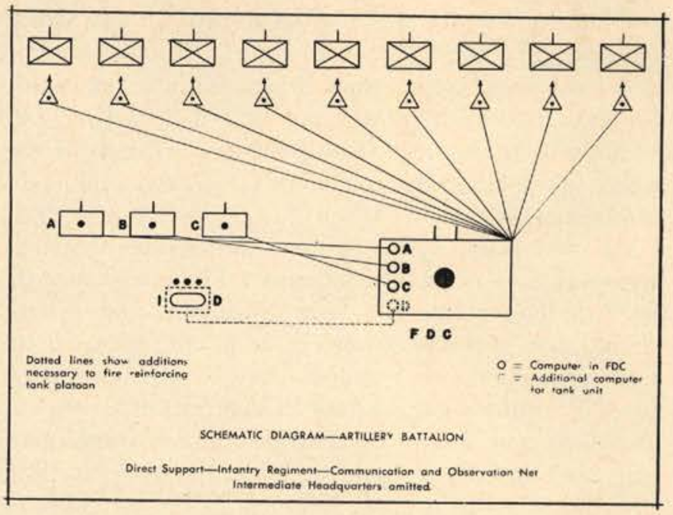
Responsibility of Artillery

Regardless of which method is employed, the artillery must be prepared to complete the position area survey for the tanks and, depending on the experience and training of the tank crewmen in indirect methods, to supervise the laying of the tanks on an azimuth or a base angle.

Should the supporting tank unit be sufficiently manned by crews capable of completing the position area survey and laying the tanks, then the work of the artillery is lightened. While it is desirable that the tanker be proficient in all phases of indirect firing, from adjustment of fire to survey, it is unreasonable to expect the efficient performance of such work if the unit has been on its primary mission for an extended time or if its trained crewmen have become casualties.

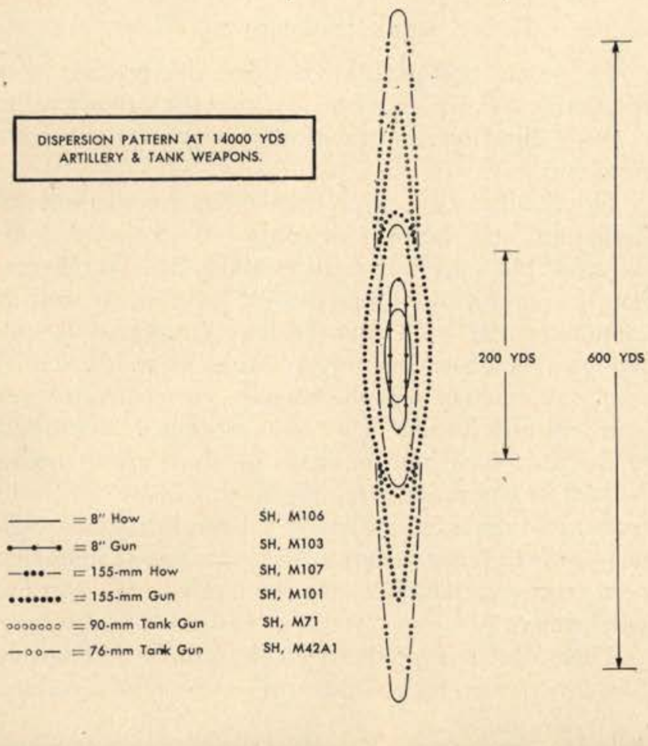
Our experience during the late war compels the conclusion that rapid mobilization and even more rapid appointment and training of young and inexperienced officers cannot give to the arms sustained efficiency in both primary and secondary roles—not that the tanker's performance of indirect artillery fire is beyond his capabilities, but simply because, in the time allotted to produce an officer or a noncommissioned officer, true efficiency can be achieved only in the primary role. Experience thereafter will build efficiency in both roles, until the point is reached in combat when inexperienced reinforcements are the bulk of the key personnel. When that point is reached, the tanker must rely on the relatively stable artillery system to prepare him for firing and to supervise his firing.

No inference should be taken from the aforesaid that tankers using current equipment should not be trained in indirect fire methods. However, it should be appreciated, particularly by the artilleryman, that a tank unit which successfully passed its training tests in artillery firing might be totally incapable of such firing at a later combat date unless supervised and controlled by artillery units.


A
B
C
OA
OB
OC
D
F D C
Dotted lines show additions necessary to fire reinforcing tank platoon
O = Computer in FDC
= Additional computer for tank unit

SCHEMATIC DIAGRAM—ARTILLERY BATTALION

Direct Support—Infantry Regiment—Communication and Observation Net
Intermediate Headquarters omitted.


200 YDS
200 YDS
600 YDS
—— = 8" How SH, M106
•—•—• = 8" Gun SH, M103
—•••— = 155-mm How SH, M107
••••••• = 155-mm Gun SH, M101
ooooooo = 90-mm Tank Gun SH, M71
—oo— = 76-mm Tank Gun SH, M42A1

DISPERSION PATTERN AT 14000 YDS
ARTILLERY & TANK WEAPONS.

Conclusion—Indirect Fire

Insofar as indirect fire is concerned, we can conclude that the use of *any* tank weapon, other than the 105-mm assault gun, to support *any* echelon of artillery, involves such a compromise of elements that general use of tank weapons in this manner should be discouraged.

If their general use in support of artillery is required, greatest effect can be secured by employing them in conformity with the capabilities heretofore discussed.

However, their use under special or unusual conditions is warranted. For example:

1. As a counterintelligence weapon to fire limited artillery missions during the silent massing of artillery for an offensive.
2. Long-range harassing and interdiction missions, especially against enemy troop assembly areas, but never at point targets, such as crossroads or OPs in houses.
3. Area firing into a proposed bridgehead.

Other special uses may well present themselves. However, one of the principal arguments against the prolonged use of tanks as artillery is the loss of the aggressive thought and action which the direct fire tanker develops.

This is especially true when tanks are reinforcing artillery which is in support of an infantry division. It is true to a lesser degree with armored artillery.

In any event, we do not imply that aggressiveness is lacking in artillery. The aggressiveness of which we speak is of another sort; it is that aggressiveness engendered by physical contact with the enemy. The tanker is trained and his equipment is developed to close in, penetrate, destroy, and kill.

CARDED

THE ARMORED SCHOOL TEACHES LEADERSHIP

by Lieutenant Colonel Rudolph Barlow

WHY LEADERSHIP INSTRUCTION IS GIVEN IN THE ARMORED SCHOOL

DO you remember these headlines? 16 December 1944—AMERICAN TROOPS FIGHT OFF GERMAN ARMY, GENERAL VON RUNDSTEDT ATTACKS THROUGH FIRST ARMY; 16 August 1945—AMERICAN TROOPS RIOT IN MANILA. On these memorable dates, examples of leadership, as good and as bad as any in the history of the United States, were revealed in our officers and NCOs. What is the reason for such situations? Why did our officers and NCOs respond so effectively in the Battle of the Bulge, and why did they fail so miserably in Manila in August of 1945? WHY? Because so many of them had not been educated and trained in the over-all responsibilities of leadership and the proper application of the techniques of leadership necessary to control the American soldier in any and all conditions of war and peace. In discussing leadership, we know that the wisdom of the sages, the philosophy of the most prominent scholars, and the best thought of the great military leaders of history have not as yet produced a final solution to the problem of teaching leadership. Today, to the above efforts we are able to add the findings of the scientists, and with this aid are approaching a solution of instructing how to better lead our American citizen-soldier. The scientists say that leadership is an art that can be acquired by the officers and NCOs in our modern Army. It is based on the concept of understanding, predicting, and controlling the behavior of men. Opposed to this theory are many people who believe that the great leader is "born, not made." This may well be true, but science says "NO." Science admits that some men perhaps are born with greater intelligence, courage, and determination than others, but only study and strict observance of the practical factors governing good leadership techniques enable them to rise above the masses. The fact that science says leadership is an art, the technique of which can be acquired, means that the vast majority of military leaders can increase their innate leadership ability by study and application of approved techniques of leading men. The Armored School has accepted this theory of *learned leadership,* and stresses the importance of the fact that fundamentals of leadership may be taught in the classroom. It believes that it is the duty of the school to educate and train the student to be a leader of men in order that he will be better prepared to meet the leadership problems he will encounter in his unit. The Armored School also maintains that the student, having acquired, in school, the fundamentals of leadership, will readily assume the responsibility of properly applying the techniques and principles of leadership taught to him.

The school is the instrument used by the Army to present doctrine of tactics, weapons, and communications. It must also be the instrument to present a sound, logical approach to teaching a theory of how to lead our American soldier. On this subject, it must be most progressive in its teachings, techniques, and research. This The Armored School has accomplished through the establishment of a Leadership Division in the General Instruction Department. This division is responsible for the development, presentation, practical illustration, and organization of all leadership instruction within The Armored School.

Why teach leadership in the classroom? Because subject matter presented in a classroom must necessarily be accepted Army doctrine. Too, it must be well organized, logical, and methodical in its presentation. Also, the student more readily accepts such information from the school system. Last, it insures uniform instruction on the subject matter to all students and hastens acceptance throughout the Army of the fact that leadership is an acquired art. Napoleon said, "Everywhere brute force bows before the man who possesses exceptional knowledge and understanding." The service school is the most reliable means of developing leaders with exceptional knowledge and understanding. Because of the basic requirement of knowledge and understanding in the good leader, leadership instruction is a part of the curriculum given in The Armored School to every student, because sooner or later the student finds himself in a leadership capacity. He will meet this situation only to the degree his education and training have prepared him.

Lieutenant Colonel Rudolph Barlow served 39 months overseas with 1st Armored Division. He commanded a tank company in the landings at Oran, and commanded the first American tank unit attached to Blade Force British into Tunisia. With 1st Armored units he was successively Battalion Executive Officer at Anzio and Battalion Commander in the Rome-Arno and Po Valley drives. He is at present Chief of the Leadership Division, The Armored School.

WHAT IS THE SCOPE OF LEADERSHIP INSTRUCTION?

What should constitute the scope of leadership instruction has been the root of much discussion and disagreement. However, it is agreed that the scope of such instruction must be simple, logical, and methodical, if the student is to accept and acquire it in the short time he is exposed to the subject matter. The Armored School has accepted, as the most practical solution to what should constitute leadership instruction, the basic outline of *The Psychology of Leadership,* developed at Yale University in May 1946 and accepted by the War Department. This basic pattern has been adopted in varying degrees by the other service schools, including West Point.

The organization of the leadership course is to divide it into definite phases. The manner of and time devoted to presentation of each phase necessarily vary with the particular point under discussion. Briefly the scope of the leadership course in The Armored School is as follows:

Phase I. To provide the necessary background and stimulate interest, an entirely new and enlightening approach to the subject is used, centering the discussion around the importance of our ability to lead the citizen-soldier. The fact that the efficient use of manpower is the key to success in war must be understood by all leaders. One of our most eminent military leaders, Major General Maxwell Taylor, in his article, "Leading The American Soldier," in the February 1947 issue of *The Field Artillery Journal,* emphasizes this point. He states that it is an established fact that the citizen-soldier is the man with whom we must fight our wars; further, that the majority of these men—90-95%—are perfectly normal human beings. These men, it must be remembered, have been living in a free society and have formed ideas, habits, and needs based on that society in which they have been reared. The sudden transplanting of such a group of men into a regimented society requires time, patience, and training before it can be expected that they will react in a manner that is truly indicative of good soldiers.

The natural consequence of such an upheaval of so large a group of men in our country can only result in major leadership problems to our military leaders. Patriotic motives alone are scarcely sufficient to remain as a motivating factor for long, when the citizen-soldier encounters problems of adjustment caused by his removal from his family and friends, economic problems—usually of less income, the necessity of doing types of work which often are not commensurate to his experience and ability, and the problem of restriction in his speech and actions.

In this first phase, The Armored School emphasizes the importance of understanding the definition of leadership. Based on the findings of the officers and psychologists instrumental in developing the Yale outline on leadership, The Armored School has adopted the definition recommended. It is: "Leadership is the art of inducing men to cooperate willingly toward the achievement of a common goal." Some schools of thought may take issue with the definition and prefer stronger language such as "imposing one's will" rather than "inducing." The Armored School believes that true leadership is based on ability and understanding, and that the use of force as indicated in "imposing one's will" is secondary. Both have merit and should be given due consideration as to their application with time, place, and personnel involved.

Among the fundamentals stressed in the first phase is the fact that when an individual accepts a position of leadership, he incurs considerable responsibility toward the group. The leader must also understand that there are certain basic fundamentals to practice in leading and controlling the platoon, company, and battalion. For example, a leader is able to effectively control only when the men recognize his authority over them, or when they recognize him as their superior in knowledge and skill pertaining to their particular organization, and when he is able to recognize and reward their efforts in performing their work.

The leader must further realize that if he is to fulfill his responsibilities as a leader, it is essential that he follow a planned approach to convincing the men that they have a vital interest in, and will be rewarded for, the proper and effective fulfillment of the unit's mission.

At the completion of this phase, a review and examination are conducted to insure thorough knowledge of the various fundamentals presented.

Phase II. Included in the scope of a leadership course there should be a detailed study of the human being. In the leadership course at The Armored School, this developed through a study of personnel adjustment. This phase, because it deals with psychology, psychiatry, and medicine, is presented by the medical instructors of the school. Under the supervision of the Director of Medical Instruction, the problem of adjustment of the individual to a regimented society is developed. Records of World War II form the basis for justification of developing, as a part of leadership instruction, the importance of knowing the problems of human adjustment. To quote records of World War II, 1,850,000 men who appeared before medical examiners of Selective Service boards were rejected for neuropsychiatric disorders. Even more startling is the fact that over one million men who were inducted were later admitted to army hospitals for psychiatric disorders. Also, 163,000 were actually discharged under provisions of AR 615-368 and AR 615-369. In addition, there were thousands of soldiers tried by courts-martial and confined in military prisons (72,000 general prisoners) as a result of behavior stemming from psychiatric disorders; and there were countless others whose performance of their military duties was inefficient as a result of their failure to make a normal adjustment to the military environment.

Based on the above facts, any factor which can eliminate the loss of such a large segment of potential man power must be developed by our Army. One of the most important factors is *proper and effective leadership*. The preservation of the mental health of a unit or individual is a responsibility of command in exactly the same manner as the prevention of communicable diseases, military sanitation, or actual training of troops. Effective leadership is possible only when a working knowledge of human behavior is acquired and the techniques of good leadership are applied to influence the behavior of men in desired directions.

In order to clarify the subject, the medical instructor shows first the personality structure of the individual. Personality structure takes into consideration man's reflex action, his instincts, his ego, and his conscience. Emphasis is placed on the fact that each plays an effective part in the real behavior of the soldier, governing his actions by the degree to which each is developed in the individual.

Goethe said, "All men are not equal, nor can they be so." This is perhaps best brought out by checking intelligence, aptitudes, physical structure, and stability of many men in a unit. However, though there are many differences among our men, they do react in a similar manner to their environment, examples of conduct, and type of leadership displayed. To understand the many variations which are encountered in a group of men, one must realize the fact that the unconscious mind of the individual may many times cause him to perform in an inexplicable manner, sometimes contrary to accepted customs or laws. Usually there is a basis for such behavior; and as leaders, it is necessary for us to see that such causes are discovered and whenever possible removed or corrected. The adjustment capacities of soldiers vary, and it is important that this is understood by our leaders. Our democratic society permits the survival of the weak. A means of utilizing, to the best of our abilities, those individuals who are not capable of meeting their daily problems of living must be found. It is well known that most of our people will not, and do not, respond to any attempt to influence and control their behavior by threat of punishment or excessive use of fear. Success with our people is much greater when, through guidance and proper leadership, they are taught to control their reflexes and instincts and to develop a type of conscience which produces a behavior that is acceptable to the society in which they live. This is many times referred to as "providing the troops with a motive." Webster defines a motive as "That within the individual, rather than without—i.e., any idea, need, emotion, or organic state—which incites him to action." The leader must realize that the ability of an individual to adjust himself is in relation to the degree in which he projects himself into or withdraws himself from his environment. This brings in the terms "extrovert," one who has a tendency to live outside himself, and "introvert," one who tends to live within himself. With these terms, one is able to classify individuals such as the artists of the stage, opera, or screen, many labor union leaders, and military men of the type of the late General Patton as extrovert personalities. These extroverts usually make excellent platoon, company, and battalion commanders. In the introvert type, such as the creators of unforgettable symphonies, priceless painting, operas, poetry, and philosophy and military men like General Bradley, we see men who are not easily moved by reverses or frustrations; here are the men who are capable of meticulous planning and logistics to support a planned campaign. Thus is seen a pattern easily identifiable, showing how each type has his place in our Army. However, most men probably will fall somewhere between these two extreme types.

In discussing adjustment it is possible to further classify soldiers according to common expressions such as the well-known *Casper Milquetoast,* the *eight ball,* the *New England Puritan,* the chronic black marketeer. Men in these categories are daily entering our Army, and the leader is required to use them in the most effective and efficient manner possible. The conflicts of adjustment which many of these men go through are readily described in the following: [1]"A man so often wants to do two opposite things at the same time, and he wants desperately to do both. He wants to dominate other men and yet be liked by them. He wants to give vent to his anger, but doesn't want to get into hot water. He wants to gain promotion, yet he doesn't want to do hard work. Above all, he wants to be a brave and true soldier—to keep the soldier's faith—and yet he wants to live. How to be brave and safe—that is the greatest psychological problem for the soldier."

Phase II stresses simply that in our society there are many potential citizen-soldiers who can and must be effectively utilized in our Army to supplement our man power. Phase II further emphasizes the importance of understanding that adjustment from civil to military life is a great step for many men, and that understanding and the application of good leadership techniques are required to fully utilize this source of man power. The effectiveness of these millions of men, whether they be placed in combat units or service units, will be determined by the effectiveness of the leadership given them.

Phase III. In considering our over-all scope of leadership instruction, it necessarily follows that it is essential to decide how the leader can most effectively influence the behavior of his squad, platoon, company, or battalion. The psychologist says that it is possible to do so because: first, men have a tendency to imitate their immediate superiors; second, it is possible to influence man's thinking because most men are very susceptible to the power of suggestion or good salesmanship; third, the behavior of man is quickly and easily influenced by his immediate welfare. Each of these factors is brought out in what are termed *roles of the leader*. The fulfillment of the roles by the leader, at one time or another, will induce men into a willing and cooperative spirit of acceptance of his leadership and the goals set for the unit.

What are the roles of the leader? They are: the leader as a model soldier, a commander, an instructor, a counselor, a personnel technician, and the custodian of his men's welfare.

[2]"In no other profession are the penalties for employing untrained personnel so appalling and so irrevocable as in the military." Untrained personnel in a leadership capacity are disastrous to the Army. Therefore the potential leader must master each role to the extent that he is contributing something beneficial to the group rather than merely exerting mastery and satisfaction of his personal desires. The Armored School is faced with the problem of including and presenting each role to the student in teaching him the fundamentals of leadership. How and what is to be taught about each role?

The Model Soldier. Because men are imitators, the leader relies upon the student's close observation in presenting this role not only from the platform but also from daily contacts. Through formal lecture the leader must emphasize that good leadership is first and most easily impressed upon the subordinate through example. Second, the leader must be aware of the particular traits or qualities which most influence the men, and which must be acquired. These are: knowledge, decisiveness, initiative, tact, bearing, courage, endurance, dependability, justice, enthusiasm. Third, is the necessity for constant practice to acquire these desirable traits and to apply them in the daily contacts with men. Opportunity for discussion or expression on the value of each is most important to establish the value of this role.

The Commander. Again, it must be emphasized that leadership is an acquired art. Because of their experiences, certain line officers are initially more efficient in the conduct of their duties than are others. The ability to command is all-important and is based on certain facts, among which are the ability to receive an order from a superior and the ability to plan to effectively execute that order regardless of any personal disagreement as to its requirement. Always the problem of the instructor is to impress upon the student that the proper fulfillment of this role entails a further bit of planning and follow-up in order to fulfill the requirements of the original order or instructions. This includes such items as: determining how best to carry out the order, assignment of duties to subordinates with necessary explanations, investigating progress of subordinates in carrying out their assigned tasks, and rewarding the subordinates for work well performed. This role of the commander must be effectively performed in the eyes of the men. The leader's relation with his superiors in this role is equally as important as his relation to his subordinates. His ability to repeatedly complete, with success, the various missions given him, even though they may seem trivial, establishes him as a reliable and trustworthy soldier and will justify his command position.

The Instructor. It is commonly said that in the Armed Forces, a major portion of the soldier's time is spent either as an instructor or as a student. Ability to instruct is, in many cases, the determining factor of the leader's success. [3]"Victory in war does not depend entirely upon numbers or mere courage; only skill and discipline will insure it. We find that the Romans owed the conquest of the world to no other cause than continual military training, exact observance of discipline in their camps, and unwearied cultivation of the other arts of war."

Teachers learn to instruct just as a golfer learns to play golf. How to instruct must be mastered by the leader, whether he be officer or NCO. There should be no misapprehension as to teaching as a peacetime duty. The leader has a definite result which must be achieved: that of training and developing human products who are qualified to master their particular jobs and who can, if necessary, train a subordinate or replacement in turn. To retain an individual who chooses not to become an instructor, but who perchance might be a "bearcat" in battle, is to invest in a poor risk. Instruction is the key to good training. A trained soldier is in most cases the equal of two or three untrained soldiers; and too, the trained soldier is the more aggressive and resolute individual.

The Personnel Technician. [4]"The selective assignment of personnel to appropriate duties has close relationship to morale." Personnel refers to employees in an organization. In the Army, it necessarily refers to all persons who are members of the Armed Forces. The problem of military personnel and their utilization in effective and productive labor is one of leadership.

Among the problems of the Army is that of man power. Experience in World War II has definitely established the fact that there are limitations on the quantity and quality of man power available to meet our future emergencies. The partial solution is more effective utilization of man power in every unit. This makes it necessary for the leader to properly utilize each man to reduce training time, increase individual and unit efficiency, and produce a type of morale that makes a man happy to be a member of that particular unit. The leader, based on the above facts, will early find it necessary to acquire as much training and experience in personnel assignment as it is humanly possible for him to gain. In this leadership course, the fundamentals of personnel assignment are taught, and included is some practical work in actual testing to stress its importance as a guide in assigning personnel to a specific job.

Among the first questions asked by the soldier, volunteer or draftee, is "What do I do?" For the most part, jobs in the unit already exist. The leader's primary problem is to fit the man to one of the jobs. However, be-

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[1] From *Psychology for the Fighting Man.*

[2] General Douglas MacArthur, Annual Report of The Chief of Staff.

[3] Vegetius, De Re Militari, 4th Century.

[4] Munson, General E. L.

fore the leader can solve the man-job problem, he must first acquire two essential bits of information: one, the job requirements; and two, the man's ability or aptitude to perform the job. When job requirements and man's ability coincide, proper job performance may be anticipated. The importance of job assignment is perhaps best illustrated in industry. It is now a well-established fact that industry has allotted huge sums of money in its effort to secure better job assignment among its employees—not from any humanitarian motives, but from the necessity to produce a profit through increased efficiency and morale in its workers.

The Army, too, has much at stake and finds that it must consider profit in terms of human life, time, and, of course, expense in producing qualified soldiers. How does personnel management fit into the leader's life in the battalion and company? The answer is simple: The battalion and company are the places where most problems of misassignment of personnel occur. The initial job of the S-1, company commander, and first sergeant is to assign men to their proper place in the organization, and to continually make corrections and improvements. While no line officer may be expected to make a very detailed and comprehensive analysis of every post of his command, he may wisely survey the requirements necessary for the specialized occupations under his supervision.

In the discussion considerable time is devoted to the technique of job and man analysis. The most important points brought out are: (1) educational background necessary for a man to function effectively on the job; (2) the amount of previous experience needed for rapid adjustment to the new task; (3) the speed with which soldiers can learn the new skills involved.

The personnel technician role is further emphasized by showing the many means available to secure information on the soldier's qualifications. There are: the soldier's classification card DA AGO Form 20; various psychological tests to indicate (1) learning ability and general intelligence, (2) general aptitude, or the ability to learn a specialized skill, and (3) trade proficiency, or the specialized skills the soldier already possesses; evaluation reports; and service records. The use of these aids and tests definitely facilitates the selection of the right man for the right job.

The Counselor. Almost every soldier has interests and personal problems which require or occupy much of his thinking time after his entry into the military service. At his home he would normally turn for counsel to his parent, wife, friend, lawyer, minister or priest, or some other person in whom he has trust and confidence. In the Army, he must and will usually turn to his company commander. The leader must be prepared to meet and assist his men with their personal problems. The importance of directing the soldier's thoughts back to his work is readily evident, because personal problems act as a brake to his efficient performance on the job.

To properly carry out this counseling role, the scope of the course includes certain fundamentals of what must be taken into consideration in trying to counsel any individual. For example, the first thing to do is to divide into types the problems that are likely to be encountered. These usually are: (1) soldier versus family, (2) soldier versus soldier, (3) mentally unstable individuals.

The soldier versus family type usually involves finances, housing, children, separation, in-laws, etc. The soldier versus soldier type includes promotions, leaves, finances, petty jealousy, duty hours, etc. The mentally unstable person involves either the insane or the badly adjusted person in the military organization. Once the leader knows the general types of problems requiring counseling, he can more easily arrive at a solution. However, his biggest problem is still, "How can I successfully conduct the interview with the counselee?" The leader must realize that for the most part, the purpose is to correct misunderstandings and arrive at a solution which is agreeable to the soldier. The leader must also remember that successful counseling is accomplished only when proper preparation has been made, which means to secure information from service record, Form 20, or any other source possible. Next, through personal observation, the leader must learn what the attitude and interests of the counselee are. Having acquired a background, the actual interview must take place, with the interviewee entirely at ease in order to insure his active participation. Once the purpose of the interview has been established and the stories checked, a solution must be arrived at jointly. The participation of the counselee in arriving at the solution is highly important, for he must believe it before he will apply it. Skillful closing of the interview and subsequent follow-up are necessary, too. In counseling, the fact which must always remain uppermost in importance is that the soldier's problem must be eliminated if he is to be of further value to the unit and the Army.

The Custodian of His Men's Welfare. Man is but a creature of nature, and like other members of the animal kingdom requires food, shelter, clothing, rest, etc. The effectiveness of the leader in meeting this basic requirement found in all men is a potent tool in controlling them. The number of men our Army can effectively place on the field of battle is in proportion to the leader's success in having physically and emotionally fit products capable of withstanding the rigors and demoralizing effects of combat. To fulfill this mission, the leader must learn what duties, functions, and provisions are necessary in the proper care of men.

Through the media of lecture and conference, stressing personal examples, the importance of this role is readily established. In developing such a role the most important factors to be stressed are that responsibility can never be delegated, and that interest in one's men and in the individual welfare of each soldier is a continuous process.

What are some of these factors which have a direct relation to the morale of the soldier? They are as follows: housekeeping, including mess, living quarters, sanitation, health, clothing and individual equipment; administration, including off-duty time, keeping the men properly informed, impartial duty assignments and treatment, going to bat for the men, and personal interest and consideration by friendliness, courtesy, tact, knowing the names of the men, etc. Opportunities for recreation, education, and avocation also play a leading role in the morale of soldiers, and only too recently have the Armed Forces become thoroughly aware of this deeply imbedded need in men. In summarizing such an important role we might note that even Shakespeare recognized the correlation between man's temperament and the satisfaction of his daily need when he said:

> "Let me have men about me that are fat:
> Sleek-headed men and such as sleep o' nights,
> Yon Cassius has a lean and hungry look,
> He thinks too much, such men are dangerous."

Phase IV of the leadership course stresses the necessity for the officer and NCO to know the goals he must attain with his men. They are more commonly referred to as objectives. These objectives are simply and pointedly *discipline, efficiency, morale,* and *esprit de corps.* When the leader has successfully developed these qualities in his soldiers, he will have few problems in leadership. Surveys on the subject of these objectives will invariably reveal a lack of knowledge as to what the leaders seek and how they would achieve it. It is necessary to enumerate slowly, but precisely, the fundamentals in developing each of the qualities named. The subject matter presented is as follows:

Discipline. Discipline must be understood as a *mental attitude* of the individual. The things that characterize discipline are *obedience* and *proper conduct;* they are developed in the individual through training. AR 600-10 brings out each of these points very emphatically. George Washington 170 years ago made the comment that "To be prepared for war is one of the most effectual means of preserving peace. A free people ought not only be armed but disciplined." The purpose of devoting a part of the time allotted to the course to a discussion of discipline is to afford an opportunity for the student to learn what characterizes discipline, and how the leader may develop it in his unit.

It must be remembered that any organized society possesses a great amount of discipline. In order for any group to survive, the individuals in that group must subordinate themselves to live within the taboos, codes of conduct, and laws necessary to insure the survival of the group. Military discipline is but an extension or specialized application of the discipline already acquired, and is designed to insure success in our military efforts. Mistakenly it is too often thought of as synonymous with punishment. A study of early discipline readily reveals how this mistaken concept developed. Today, our modern military organizations fight wars with the products of a highly civilized, educated, and democratic society. The concept of how to control this individual must necessarily be revised. The methods of Frederick the Great, though successful in his time and possibly still successful with certain nationalities today, do not fit our American soldier. There is no question today of the importance and place of discipline in our Army; but there is some question as to how it shall be developed. History reveals too well what happens on the field of battle with any undisciplined unit. Further, the example of the Russian Army after 1917, up through its campaign with Finland in 1941, shows only too well what happens with too liberal an organization in an army. We have today a well-defined explanation of what the interpretation of discipline must mean to our leaders and our soldiers in AR 600-10. It is as follows: "Military discipline is that mental attitude and state of training which renders obedience and proper conduct instinctive under all conditions. It is founded upon respect for and loyalty to properly constituted authority. While it is developed primarily by military drill, every feature of military life has its effect on military discipline. It is generally indicated in an individual or unit by smartness of appearance and action; by cleanliness and neatness of dress, equipment, or quarters; by respect for seniors; and by the prompt and cheerful execution by subordinates of both the letter and the spirit of the legal orders of their lawful superiors." This paragraph should periodically be read and studied by all military personnel.

How are our leaders going to develop those characteristics mentioned in AR 600-10? Through an intensive training and educating of our soldier. The basic pattern for the development of discipline has not materially changed. It is still necessary to utilize dismounted drill; ceremonies; the salute; high standards of dress, cleanliness, and neatness. Example is still a prime motivating factor in developing discipline in men. The example of the leader in his receiving and execution of his orders, in the respect he displays for his seniors and subordinates, is essential. However, the leader must realize, before a disciplined product can be produced, that it is necessary to give the individual plenty of opportunity to practice, plenty of instruction, and, more important, time to adjust and develop new habits and methods of living, particularly in a regimented society.

The negative aspect, punishment, cannot be ignored in discussing discipline. It must be recognized that people will be careless, quarrel, malinger, be inattentive, and be insubordinate at times. For these people some type of punishment is many times justified and necessary. The leader should have no qualms about the administration of punishment under such conditions. However, his excessive reliance upon his delegated authority and ability to punish can only lead to mutiny in varying degrees, inefficiency, poor morale and usually his own downfall. The best way to promote obedience is to educate and train the soldier or officer to want to do what he must do.

Efficiency. In our modern mechanized type of military unit, which employs a multitude of mechanical machines and devices, the most important product governing success is still the individual soldier. Machines operate efficiently only to the extent that the soldier permits them, depending on his knowledge, aptitude, skill, and interest. Today, as never before in our Army, it is necessary to think in terms of efficiency in our soldier. This need is brought out by our realization of the limitations of our man power in both quantity and quality. The problems of man power, man-hours of work, money, increased production, casualties, and death are now the problems of our platoon leaders, company commanders, and battalion commanders. It is self-evident that the leader must learn all he possibly can about how to produce an efficient soldier. The leader, it is readily seen, is responsible for knowing what affects the efficiency of each of his soldiers. The scope of the discussion on efficiency states simply that the basic factors which affect the efficiency of an individual are: working conditions; work habits; degree and type of fatigue produced by the work; effects of drugs, stimulants, or intoxicants; and physical condition and physique of the person. This indicates the necessity of survey by the leader on the above-mentioned factors to be found in his unit, and the taking of necessary corrective action. The scope further establishes that in making surveys or attempting to measure efficiency in a unit a very precise procedure is necessary. For example, in attempting to measure efficiency it is necessary first to step up *definite requirements* to insure dependable indicators of efficiency. This will include complete coverage of the entire area of skills to be measured, accuracy in measuring each skill, and definite standards of measurement. Second, *the best available types* of measures must be used to show exactly the degree of skill or efficiency attained. Third, the leader must realize exactly *what aspect of individual or unit efficiency he is going to measure*, such as the condition of the unit, knowledge of military subjects, or the actual performance of the unit. Efficiency is a yardstick applied to the leader and one which must show a high degree of attainment if our Army is to meet its requirements in the future.

Morale. Napoleon said, "In war, morale conditions make up three quarters of the game: the relative balance of man power accounts for only the remaining quarter." The importance of morale and its relation to leadership is as old as knowledge of the military. Today, we know that morale is not limited to the battlefield, but applies to all members of the Armed Forces and all civilians. No course in leadership would be complete without including this subject. What is morale? How does one develop good morale? These two questions form the basis for a discussion on morale. The definition most applicable is: "Morale is a *mental attitude* that one develops from his *experiences*, first as a civilian, and second as a member of the Armed Forces." Experiences influence man's attitude immediately, and the leader might well remember that most initial experiences in the Army are not particularly pleasant. The leader also must understand that a man is motivated by his needs: the primitive or basic needs of food, water, shelter, and sex; and his social needs—his social position, acceptance of him by a group, recreational facilities, etc. When these motivating needs are not satisfied, a morale problem is inevitable.

Teaching the subject of morale calls for a twofold purpose; first, to get the student to recognize what morale is; and second, to tell him how to achieve or develop good morale in the individual or unit. The first is accomplished through our definition and explanation of the basic causes. The methods of achievement may be stated briefly as follows: (1) The soldier must be made to feel that it is desirable for him to be in the Army. He must feel that it is an honor, a duty, and a privilege. He must feel that his parents, friends, and fellow soldiers think he should serve his country, especially in time of war. (2) The soldier must feel that his job is appropriate to his ability, training, and experience. To remove interest, incentive, and satisfaction from one's daily work immediately causes a serious morale problem. (3) The soldier must feel that he will receive proper recognition and reward for his work and efforts. Recognition and reward are the stimulating factors for which men work throughout their daily lives. (4) The soldier must also feel that prior to being called upon to perform his duties, he is given adequate training, explanation, and time for preparation. The lack of these merely causes failure on the part of the soldier, resulting in frustration and resentment. (5) The soldier also must know that impartial treatment is accorded to every soldier. Partiality is one of the quickest means of creating poor morale. (6) The soldier demands equitable living conditions, food, clothing, etc., among all personnel. They are the things around which his daily life is evolved and which most quickly affect his daily attitude. (7) The soldier, like the civilian, needs a rather definite policy as to time off, recreation, and opportunity for worship. These factors require prior planning, and this must be assured the individual in order that much of his spare time may be properly planned by him. (8) The soldier must early be properly oriented on Army policies and regulations. The need for knowledge on policy and regulations involves courts-martial and punishment. To avoid these it is necessary that he know what he can or cannot do. (9) Last, the soldier must feel that he is a member of an organization of which he can be proud. The Army has much to offer on this last requirement and much to overcome.

Esprit de corps. The fourth objective of good leadership should be the development of a high state of esprit de corps. To most students, it is necessary to show the distinction between morale and esprit de corps. Esprit de corps is distinguished by the pride that the individual has for his unit, the regard he has for his fellow soldiers, and the prestige he gains from being a member of a specific unit, as opposed to his pride in and concern for himself as indicated by morale. Esprit de corps is derived from man's social instincts. The soldier has a great need for group associations. This is evident in civilian life from the fact that men form the various fraternal organizations, clubs, etc., in order to satisfy their longing to belong to a recognized and acceptable group in the eyes of their friends. It is essential that the leader understand that the need for social acceptance is still in the soldier, and the logical solution is the development of pride in the soldier for his platoon, company, battalion, regiment, division, or army. Having established the importance of esprit de corps, the leadership course is primarily interested in teaching how it may be developed.

Esprit de corps is developed first by awakening in the soldier a realization of the esteem in which an organization is held by the soldiers of the unit and by people outside the unit. Second, it stems from the realization of the personal satisfaction, personal prestige, and general recognition the soldier gains by being a recognized member of a specific unit. Few members can long endure without this personal satisfaction. The actual technique involved is the observance of known devices which are conducive to development of good esprit de corps; i.e., utilization of the spirit of competition based on the desire of the individual and group to excel in drill, sports, knowledge, skill in manipulation of instruments, etc. Another is the requirement of high standards of discipline, dress, military courtesy. Still another is the use of historical records of accomplishments of the unit, and prominent display of standards, battle honors, distinctive insignia, distinctive uniform, etc. Too, ability to train adequately, fair play, and proper distribution of responsibility are all firm foundations upon which good esprit de corps is developed.

In teaching esprit de corps the leader can rely only upon his lecturing ability, citing examples of outstanding esprit de corps. He may utilize conference and give some practical work. However, only actual experience and observation can bring out many of the distinguishing features of good esprit de corps. Esprit de corps must always be remembered as the one factor that will keep men fighting when defeat and death are inevitable. Food, shelter, clothing, injuries, and death mean nothing to a man when what he treasures most, the esteem of his fellow soldiers and his pride in his unit, are at stake.

The four objectives of good leadership—discipline, efficiency, morale, and esprit de corps—are the true measures of success of a leader. They must be considered the goals of all officers and NCOs. Rarely can success be attained without all four, and the development of one or two, to the exclusion of the others, causes greater chaos rather than improvement in the individual or unit.

Phase V. In the previous phases of instruction the scope is devoted entirely to fundamentals of development of good leadership. Phase V pertains to those topics of leadership which must be included as special problems or situations and which are peculiar primarily to the Army. Little will be said here on any one of the topics, for each is worthy of special consideration and time. Suffice it to enumerate them as follows: *The problem of minority groups in our Army*. Here of course the situation centers around the efficient use of our Negro man power and how, through more effective and considerate leadership, this man power may best be used by our Armed Forces. *Combat leadership* is another situation peculiar only to the Armed Services, and to them only under special situations. How to prepare for this situation is and must always be a prime consideration of our leaders. Today our Armed Forces have the problem of *occupation* duty. How we can and must effectively lead our soldiers in occupation areas, and what the influences to which they will be subjected are, must be given extensive thought by us in order to more efficiently and effectively carry out the assigned mission of our Armed Forces. Another problem which continually harasses our leaders, particularly the company grade officers, is the manner in which most effective selection, training, and evaluation of their subordinates should be carried out. Sufficient time is devoted to a study of how best to select and train potential NCO candidates and how best to evaluate them for future assignment and training. Last, the problem of how to keep the men properly informed is given important consideration and shows the relationship between informed men and leadership. This later is expanded into the Troop Information and Education Program.

How Leadership Instruction Is Presented

Determining the manner in which to present leadership instruction is perhaps rather confusing to many. The Armored School solves the problem by assuming that it is a course, similar in many respects to gunnery, communications, or motors. The fact to keep uppermost in one's mind is that in leadership one talks of human beings and not of inanimate items such as guns, radios, or tanks. Another point to keep in mind is that the course has two main functions: *presentation of basic principles of leading men,* and *stimulation of interests in the general subject of leadership itself*. How are these accomplished? First, by formal lectures designed to give each student a definition of leadership, the fundamentals of leading men, the fundamentals of personnel adjustment, a background in psychology, the techniques to be applied, and the basic objectives to be achieved. Second, by conferences designed to present certain aspects of the topics mentioned above with an opportunity for questions and answers to clear up any confusing points in the presentation. Third, by the seminar. The seminar is designed to break up the class into small groups to insure pure group discussion on leadership problems with a member of the class acting as the group discussion leader. Fourth, by practical work. Practical work is in the form of problems with a general situation and special situations, with the student required to fulfill certain requirements which are based on fundamentals given in previous lectures and conferences. Last, by examination. The examination is inserted to insure attention, to insure study, and to test whether or not the student has acquired the material presented. Skits also are used to illustrate many *do's* and *don'ts* of the leader; they add much to interest and variety in the classroom.

In setting up a course of this type, it must be recognized that finished leaders cannot be produced; nor must this be expected. However, mastery of subject matter insures that when the student either initially goes or returns to troop duty, he will be better prepared mentally to meet the many leadership problems he inevitably must encounter.

To Whom Is Leadership Presented?

Leadership instruction is presented to all students attending The Armored School. The amount of time devoted to the subject varies with the type of student. For example, thirteen hours of leadership are presented in the Enlisted Motor and Tracked Vehicle Course while thirty-five hours are presented to the NCO class. Also, thirty-five hours are presented to the Advanced Officers class. Why present leadership instruction to all students? First, to make all members of the Armed Forces approach the subject in the same manner; second, to stimulate interest and insure that potential leaders have a guide upon which they can rely when the opportunity is offered to them to assume an active leadership role, no matter how small the unit or what the circumstances. In presenting this subject, the basic fundamentals are always the same; only the detailed information and study will vary.

When Is Leadership Presented?

Because leadership plays such a large and important part in the life of each soldier, The Armored School presents this subject at the earliest time possible in the course the student is attending. Also, it is taught as an essential element of each course based on the premise that many of the students, shortly after they return to their units, begin to climb the ladder of promotion. The particular time of day the subject matter is presented is immaterial, so long as the teaching conditions are conducive to good learning and the students are in such a physical condition as to be receptive to instruction.

Summary

Leadership instruction in our school systems cannot be overstressed. It must be remembered that one cannot expect finished products as a result of such instruction, for practical experience is absolutely necessary. The total result of leadership instruction can only be, first, to make the average leader *think* more about leadership; second, to give him a more concrete concept of how he can better improve his own leadership. The idea of teaching leadership is not new. In the past, however, its greatest weakness has been the failure of many leaders to consider all of the broad aspects of controlling and leading groups containing a cross section of the American people. A well-balanced course, such as the student receives in The Armored School, will prepare him better for his leadership role, whether it be in a front line infantry unit or in a rear echelon postal service unit. The potential success of most leaders is determined long before they reach the battlefield. One must remember also that many surveys revealed more discontent, black marketing, venereal disease, poor morale, lack of discipline, and disrespect for officers in the rear echelon and zone of interior units than was found in the fighting units. To insure proper support from the rear echelon unit for the fighting troops, the leadership of such units must necessarily be equally as good as that in the combat unit. How is this to be secured? The only answer is, through more careful selection of leaders and, even more so, through education and training of these leaders in their responsibilities and in the actual techniques of how to be better leaders.

What is a well-balanced course in leadership? First, it is a course that establishes an applicable definition, gives an explanation of the sciences which may be utilized—such as psychology, tells how leadership develops, and outlines some of the basic fundamentals of controlling groups. Second, it is a course that offers opportunity for study of the personality of individuals. Third, it is a course that gives techniques of influencing and methods of controlling behavior of men. Fourth, it is a course that specifically outlines the qualities of discipline, efficiency, morale, and esprit de corps which must be developed in the individual soldier. Last, it is a course that considers some of the specialized problems of leadership, such as combat leadership, leadership with minority groups, and problems in selection of subordinates; a course which offers opportunity for thinking and free discussion, which lays down fundamentals of leadership which may be applied by the squad leader or by the five-star general. Leadership is something that applies to all people in all walks of life, and something that people respond to in a like manner regardless of the social scale. Our future is in our ability and skill to lead our people. Today it is common knowledge that science has brought about the machine age, and that the machine age has affected the conduct of modern war. It is therefore time for every man who commands men to learn to apply the principles of science to his men, the human machines who are the only machines that can wage successful war.

CARDE

Employment Of Tanks In Mountain Operations

by Captain Robert F. Moore

ONE often hears the statement, "This is not tank country," applied to rough or mountainous terrain. Tanks can be used in any terrain if the need for them is great enough to make the expenditure of time and labor profitable. The tank can be maneuvered into some position from which it can fire into almost any spot on the earth that an enemy would elect to defend if sufficient time is allowed for reconnaissance.

The basic concepts and principles of the use of armor, speed of maneuver, tremendous fire power, violence, and shock action are the same whether in rough, mountainous country or level and gently rolling country. The differences are minor changes in technique of employment dictated by the terrain and the fact the officers probably fight the terrain harder than the enemy.

The limited space that is passable to tanks generally reduces the number that may be employed. An armored division will look quite ridiculous strung out along a mountain road fighting on a one- or two-tank front. One company of tanks with attachments on a given route or road is, ordinarily, the best employment. A company gives good tactical and administrative control and provides as many tanks as can be used in most circumstances.

Tanks should not be assigned the dominant offensive or defensive role in mountainous areas. This role should go to the infantry with tanks attached for support. This support may include their use as a major striking force for limited objectives when the opportunity presents itself but the infantry must be prepared at all times to press on alone when difficult terrain delays or temporarily halts the progress of the tanks. Infantry must seize a bridgehead across serious obstacles. Engineers can then prepare a crossing for the tanks.

Mountains offer a great variety of natural obstacles and numerous places where movement is restricted to such an extent that effective man-made obstacles can be prepared. Major C. J. Madden, commander of the armor attached to the 10th Mountain Division during the attack on Mt. Belvedere in Italy states, "As usual, aside from the eternally restrictive terrain, the armor was delayed by mines and demolitions."[1] This calls for extensive use of engineer troops. Since the demand on divisional engineers is always heavy, it is advisable to obtain these troops from corps engineer units.

The 760th Tank Battalion operated for about two months in 1944 with a company of the 19th Engineer Regiment attached. An engineer platoon was subattached to each medium tank company. The engineers were parceled out in this manner because the battalion had the three medium companies attached to different regimental combat teams with the battalion headquarters and light tank company under division control. The medium companies attached their tankdozer to the engineer platoon which greatly increased the platoon's efficiency and furnished direct radio communications. This set-up materially speeded up the advance of the tank companies and enabled them to give more continuous support to the infantry.

Most of the work done by the engineers for the advancement of armor will be of value in the movement of supplies. On the other hand, the movement of large numbers of tanks over narrow and often thinly surfaced mountain roads often weakens these roads so much the movement of supplies is impeded.

Civilians can sometimes be used to good advantage in combat areas. The road between La Spezia and Genoa, Italy, winds along the coast through jagged, barren masses of igneous rock that rise several thousand feet abruptly out of the Mediterranean. Through a number of fortunate circumstances, the German Army was not able to defend these hills with any strength and a hastily organized team of one tank company and a motorized battalion of infantry was able to make the entire distance in two days. About 3 p.m. the first day, the force was halted by a large crater in the road. The crater was approximately 50 feet long and 30 feet deep, and on one side of the road the mountain ascended in a vertical cliff, on the other side was an almost equally abrupt drop of 100 feet. It was near a small town and not covered by fire, so many civilians came out to see what would happen. The one tankdozer was incapable of doing anything about the crater, which was blasted out of solid rock, and the engineer bulldozers had been far outdistanced. The task of filling the hole by hand looked like a hopeless job but about 100 civilian men, women, and children and as many soldiers were put to work carrying the blasted-out rock back into the crater. In an hour the first tank tried it and made it. Before dark the engineers had the road passable to trucks.

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[1] Major C. J. Madden, "Report of Action—Mt. Belvedere Attack," USA-1653.

The Germans were continually surprised at the places the American tanks could get to in World War II. This failure to anticipate and prepare adequate defense against armor in these places cost them at least one major defeat when General George S. Patton made his classic break—through the Eiffel Forest—and many minor and local defeats.

One notable example was the battle for Terracina during the 5th Army's "march on Rome." The mountains come out to meet the sea at Terracina and drop precipitously from a height of 650 feet to the water's edge at the eastern extremity of the city. The road entering from the American side or eastern side was cut into the cliff. On top of the hill, Mt. Teodorica, which overlooked the sea, was Palazino Teodorica, which the enemy used as an artillery OP; and rising behind that, the mountains stretched higher and higher. Northwest of Terracina about 20 miles was the southern end of the Anzio Beachhead and the Germans elected to hold here to prevent the main body of the 5th Army from joining with the Anzio forces. They put a deep crater in the road at a point where it was impossible for tanks to by-pass it and covered it heavily by fire. They put a strong infantry force on Teodorica and the surrounding hills and sat down in their holes to wait for us.

The infantry and tanks reached the road block at approximately 1 a.m. on May 22, 1944. Not an enemy shot had been fired since the previous afternoon. Quite a large group of tankers, infantrymen, and engineers assembled around the crater to see what could be done about it and then the enemy opened up. When dawn came it was found that the road was covered by snipers in the hills for two miles back. On the other side of the road was the sea. Attempts were made to fill the crater during the day of the 22d but to no avail. Two tanks that tried to cover the engineers' efforts were knocked out in the road which further blocked it. On the morning of the 23d, two determined infantry attacks on Teodorica were repulsed.

In the meantime Lieutenant Colonel Swift of the 48th Engineer Battalion discovered a stretch of the ancient Via Appia that led up to the top of Teodorica. The ancient Romans, without dynamite, found it easier to build their roads over the mountains than through them. This old ruin of a road was not on the map and was barely discernible on the ground. A light tank company equipped with M5 tanks was alerted to attack up this road and capture the mountain. Terracina lay directly at the foot of this mountain and beyond that were the Pontine Marshes and the beginning of the flat land similar to the Anzio beachhead area.

The engineers commenced work immediately clearing and improving the old Roman road. The tanks started up after about four hours of bulldozer and demolition work by the engineers. The lead tank threw a track at a point where it was impossible to by-pass it so an engineer bulldozer, which was still ahead, pushed the tank almost over the cliff. At about 5 p.m. on May 23, the tanks finally reached the top.

This turned out to be a small plateau with two large, strongly constructed, stone houses on the palatial order and a cemetery, la Delibra. One of the houses was Palazino Teodorica which was on the highest part of the mountain at a point where it dropped very abruptly into the sea and directly above the road block on the modern road into Terracina. The other house was La Casina and sat on the Via Appia Antica which was quite distinct on the plateau and was directly in front of the tanks.

The first platoon fanned out and formed a base of fire. The other two platoons moved to the left and right spraying the rocks with machine guns. The 1st Platoon moved up to La Casina. The small-arms fire from there was heavy and the 37mm guns, which were the heaviest armament carried on the M-5 tanks, did no apparent damage to the heavy walls. A platoon of M-4 tanks reached the top at this time and their heavier 75mm guns knocked great holes in the walls of La Casina and quickly silenced the opposition there. The M-4 tanks then turned their guns on Palazino Teodorica while the light tanks sprayed the rocks and countryside in general.

Within an hour the mountain was completely secured. After such a stubborn defense, a counterattack was expected and as it was nearly dark, the infantry dug in and reorganized. The enemy put an intense artillery concentration on the hill during the night but the counterattack did not materialize. Under cover of darkness and the artillery, the enemy all withdrew from Terracina and the next day overland contact was made with the Anzio Beachhead.

The Germans were so certain that tanks could never get at them on Mt. Teodorica that they did not have their individual antitank weapons, bazooka and panzerfaust, with them. They failed even to get artillery support in time. As a result, when tanks did get on the mountain, they faced only small-arms and mortar fire which did no damage. The mountain was captured without the loss of a tank or infantryman except for those casualties suffered in the two previous all-infantry attempts.

Tremendous casualties can be inflicted upon the enemy when he is surprised and caught off guard. An interesting example can be found in the attack on Albanete House near Cassino, Italy. At the height of the attacks on Cassino in February 1944, a British Indian Sapper unit built a road under cover of darkness part way up Monte Cassino, overlooking the town. A plan was developed to send an infantry force reinforced by a light tank company up this route with their objective, Albanete House.

Colonel Devore reports the experiences of one tank crew of this force in detail.[2] He attributes them with killing 50 to 75 enemy. The tank commander, Sergeant Lawrence M. Custer, states, ". . . just as I got to the top and could look down the way for maybe seventy-five yards, I ran over a mine. . . . When the smoke and dust cleared away, I had my head out watching and saw a mule train coming up the trail. There were a lot of Germans with the train and I let loose with the machine gun and also with the 37mm. They were all standing still looking at the tank, apparently with lots of surprise and it took them awhile to realize we were their enemy. By that time I had gotten at least 15 of them and five or more of the mules."

Sergeant Custer stayed with the disabled tank despite the fact that an enemy artillery battery was in position only 300 yards away and continued firing until his ammunition was exhausted. He and one other member of his crew were successfully rescued by another light tank.

This attack was repulsed and one of the principal reasons was the inability of the M-5 light tanks to negotiate the rough terrain without throwing off tracks. Ten of the 17 tanks that made the attack were lost, five threw tracks, two became stuck, two hit mines, and one was knocked out by an antitank gun. The present track with center guides has proven much more effective and efficient. If this attack had been made with M-24 tanks, which had not then been developed, it is possible only three tanks might have been lost and the superior fire power of the 75mm gun might have turned the tide of the battle.

Another outstanding, although not typical example of what can be gained from surprise comes from the attack of the 1st Battalion, 6th Regiment, 1st Battalion Infantry Division along Highway 62 against Fornova, Italy. Fornova lies in a small valley opening into the Po Valley with mountains on either side about 1000 to 1500 feet high.

One platoon of medium tanks was attached to this battalion for armor support. The attack commenced on 28 April 1945. Antitank, 20mm, mortar, and artillery fire held up the advance of the tanks and infantry along the road and mines greatly limited the opportunities for deployment of the tanks. The drive was stopped at Gaiano.

The tank company commander led another unattached platoon without infantry support into the high-ground southwest of Fornova. This encircling movement apparently caught the enemy completely unaware and about 12 trucks were destroyed by fire from the high ground. It was impossible to get down into Fornova from that point. The enemy began milling about in complete confusion and the tanks fired 300 rounds of 76mm and 10,000 rounds of .30-caliber ammunition into the positions in the valley before dark.

The enemy, thinking he was completely cut off, sent emissaries that night to the tanks to negotiate a surrender. The emissaries were conducted to the Brazilian Command Post. The next day, April 29, 1945, 13,879 enemy troops, including 820 officers, with over 4000 horses and 1000 assorted vehicles surrendered to the Brazilian forces.[3]

One tank of the encircling platoon was destroyed by an enemy bazooka.

The surrender of so large a force to so small a unit is not typical; it happened at a time when resistance was beginning to crumble all over Italy. The enemy commander probably grasped at the first halfway honorable opportunity to surrender.

Tanks are primarily an offensive weapon and in the defense, their offensive qualities should be utilized to the utmost by holding tanks in reserve to be used as a counterattacking force. The tanks' mobility enables them to reach any threatened point quickly and they can be employed in mass only when so held in reserve.

Mountain terrain may place such limitations on the mobility of tanks that it will be impractical to use them for a counterattacking force due to the lack of suitable routes to all points on the front of the supported unit. Their fire power may still be utilized to great advantage by placing the tanks in selected firing positions on the infantry front. Reconnaissance for positions should begin as soon as the ground is captured to give sufficient time to maneuver the tanks into position. This operation should be a part of and coordinated with the infantry's organization for holding the ground.

This type of employment will fall into two classifications; one, tanks outposted and protected by infantry to form strong points, and two, tanks used merely to reinforce and add volume to the fires of the infantry. Strong points are only of value when placed in likely avenues of approach.

Speed of movement is one of the chief protective means of the American tank; but in this type of employment, movement must be kept to a minimum so special emphasis must be placed on camouflage and concealment. Alternate positions near by should be prepared. The enemy will make every attempt to bring antitank guns to bear on the tanks if they locate them.

The 88th Division, with a tank battalion attached, was advancing slowly and with great difficulty through mountainous terrain south of Bologna, Italy, in October 1944. The division's boundaries led it along the route Mt. Grande, Monte Calderaro, Mt. Vedriano, then several miles of diminishing foothills and the Po Valley. Capturing the Po Valley would deprive the enemy of a valuable source of supply as well as excellent routes of supply and communications, therefore it was the objective of the entire 15th Army Group in Italy. Moreover, to the mountain-weary soldier in Italy, the flat land of the Po Valley seemed like the Promised Land.

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[2] Col. Devore, AGF Observer, "The Attack on Albanete House," USA-385.

[3] *After Action Reports, 760th Tank Battalion:* "Report of Action from 1 April through 30 April 1945."

Everyone from generals to privates earnestly desired to get there quickly. The Germans on the other hand desired desperately to hold it.

The division's attack on Mt. Grande was made with very little effective support from tanks since there were no roads, and the terrain was too rough and steep, and the ground too soft for tanks to negotiate it. Initially one medium company was employed along an unimproved road on the division's right flank, one medium company plus one platoon fired indirect fire reinforcing division artillery, and the other medium company less one platoon did practically nothing.

The mountain was captured and at dawn on October 21, 1944, a medium tank company, less one platoon (11 tanks), and a tank recovery vehicle started up the mountain by a very roundabout, previously reconnoitered route led by a bulldozer. The mission of the tanks was to take positions on the mountain to support the infantry. The lead tank belonging to the company commander rolled into a ravine when the newly made trail gave way on the outside edge.

The tanks proceeded on and reached the crest of a ridge leading into Mt. Grande by midafternoon. There was a cart trail along the top of this ridge. The infantry was dug in on the reverse or south slope of this ridge and the cart trail generally marked the line of outposts. The plan required the tanks to proceed over this trail to Mt. Grande.

A heavy rain commenced just as the tanks reached the crest of the ridge and the trail. The lead tank slipped off the trail and became stuck in the mud 1000 yards west of Farneto. Attempts to pull it out with other tanks were unsuccessful. The tank recovery vehicle had stopped to retrieve the company commander's tank without success and had been caught by the rain and could not climb the slick mountainside. Two more tanks were stuck in by-passing the one west of Farneto.

It was now night, and to complicate matters, the rain had changed to a heavy fog. Visibility was zero. The lead tank of the column ran off the road at Farneto and rolled on its right side. An inspection of the trail ahead, made on hands and knees, indicated that it had become too narrow for a tank to negotiate in the daylight and certainly too narrow for a foggy night. Another by-pass was attempted and four more tanks were stuck, two got through.

These two tanks successfully reached the side of Mt. Grande and backed a short distance up a trail leading to the top. Visibility improved at dawn and the platoon leader with two tanks attempted to move them 50 yards to a more concealed position. The lead tank threw a track, hopelessly trapping a second tank behind it. Of the 11 tanks, none now remained mobile.

With dawn came more rain.

Seven of the tanks stuck along the Farneto ridge trail were recovered with the help of an engineer bulldozer but one became mired in the mud again on the way to Mt. Grande and could not be retrieved. The remaining six were assembled in the only available concealed place on the side of the mountain.

Two of these tanks assisted in the capture of Monte Calderaro by firing from the road. They remained in position just north of Casa la Costa.

The attack on Mt. Vedriano began next. Two tanks got as far as Casa Cola but, after one entire infantry company was lost, a withdrawal was ordered by night to Casa il Vezzola. One tank slipped off the road, becoming hopelessly stuck, and was destroyed to prevent capture. There was room for only two tanks at Casa il Vezzola so the remaining three were sent back to Casa la Costa. The trail caved in under the last tank out and the two tanks in Casa il Vezzola had no means of withdrawal. Four tanks were now operative, two sealed in at Casa il Vezzola and two at Casa la Costa.

Two nights later at 6:30 p.m. an enemy battalion attacked Casa il Vezzola but the attack was repulsed by a company of American infantry supported by the two tanks there. The enemy battalion commander was killed by one of the tank commanders as he was trying, apparently, to get on the tank. Rocket antitank weapons were fired at the tanks from a building 20 feet away but none scored hits. It is doubtful if the position could have been held against such a superior force of enemy without the fire support of the two medium tanks.

The two tanks at Casa la Costa fired on enemy positions around Monte Calderaro whenever they could be located and when visibility permitted.

The action described here illustrates how tanks can be used for defense under the most unfavorable conditions of terrain and weather. All but three of these tanks were recovered by Ordnance when spring came.

This operation lasted from October 21, to November 8, 1944 and it was never possible for wheeled vehicles to reach the tanks. Resupply was accomplished by mule train.

Radio communications in armored units equipped with SCR 508 series radios were seriously affected by mountains. It was frequently possible to transmit and receive messages clearly for 10 to 12 miles between two stations if they are both on high ground with no intervening land masses; however, a platoon leader will not be able to reach all of his platoon if there are hills between him and some of his tanks. For this reason command tanks and command posts should keep on the highest ground possible.

It is hoped it has been shown here that armor can be used effectively in mountainous terrain despite the great difficulties. We hope the United States Army will always be victorious; therefore we must assume it will be on the offensive. The choice of where to fight generally goes to the defending army. High ground and mountains are the easiest to defend so we must prepare to fight on this kind of terrain and we must make the best possible use of every weapon available to reduce the resistance quickly. It is essential that we overcome the pessimistic attitude that tanks are of no use in mountain country.

FIELD EXPEDIENTS and BATTLEFIELD RECOVERY

by Major William R. Campbell

MAINTENANCE and field expedients are two things every officer has heard about. Probably the first thought he has is that they are dull and drab subjects involving a great deal of work. Every officer knows that maintenance is necessary; he may or may not know a great deal about it, but in most cases he feels that he will be fortunate in having an enthusiastic, conscientious, qualified maintenance officer to keep his vehicles in a high state of maintenance.

Every Army officer wants to know his equipment and to care for it, making maximum use of the means and personnel available. A rifle is an important weapon which is well cared for and inspected daily by an officer; but certainly it is no more important than a vehicle nor is it as expensive, complicated, or difficult to procure.

Do all vehicles receive daily care, and are they inspected by an officer daily? I think the answer is no. Now is the time to establish a high standard of preventive maintenance and to allow every officer to become familiar with his machines. He may be a bold, aggressive commander, but he will be greatly handicapped if he does not know the capabilities and limitations of his vehicles and keep a high standard of maintenance.

If an officer has the above characteristics, he will be able to cope with the unusual, which is certain to arise. There are a few field expedients set forth in maintenance manuals, but not nearly enough to meet the ever-changing situation; so in this article I wish to set forth some of the expedients and battlefield recovery methods used by many officers in both armored and infantry divisions. This will give you reassurance as to the ingenuity of the United States Army officer and soldier, as well as some interesting ideas which may be of value to you at some future time.

In cases where it is possible, I have given the names of the persons responsible for the action and the unit in which the expedient was put into effect to accomplish a mission or to remedy the failure of equipment.

Waterproofing was a field expedient which was developed by the British for the gradually sloping shores which they knew would be crossed in a seaborne invasion. It was later improved upon to suit United States Army vehicles. Divisions entering Africa were some of the first United States units to waterproof and to use other expedient remedies to overcome unforeseeable difficulties.

Many times the engine of a vehicle would drown out coming ashore through the salt water. One of the most common causes was water grounding out the ignition system. This was remedied by towing the vehicle out of the sea water, removing the distributor cap to allow the water to run out, and then applying carbon tetrachloride from the fire extinguisher of the disabled vehicle. The carbon tetrachloride evaporates rapidly and carries the water with it, leaving the distributor dry and operative.

Sandbags were placed on the floors of all wheeled vehicles to protect the occupants in the event a vehicle struck a land mine. In many cases, a piece of armor plate was welded to the floor of a vehicle before putting in the sandbags.

Cannibalization is the stripping of a damaged vehicle of all usable parts to enable a unit to keep other vehicles in operation. This practice probably first began in Africa; it was a fairly common practice because of the acute shortage of both replacement parts and vehicles plus the lack of corps ordnance units.

Cannibalization was carried out thoroughly and efficiently; this may sound like an impossibility, but it is the only recourse in dire necessity. Sometimes, in Europe, a selfish individual would take a battery or a set of road wheels and leave the rest of the vehicle in a field or along the side of the road. This is utter waste and should not be tolerated. It was a practice in one corps to attach the unserviceable part to the vehicle cannibalized. If the unserviceable part could not be attached, in the case of a cannibalized tank, it was placed in the turret in order that the vehicle was always complete when evacuated. When cannibalization is necessary, it should be carried out in detail, and nothing should be left for the elements to destroy.

The manual calls for certain specifications in the way of adjustments. These caused certain pieces of equipment to fail, so units made certain modifications.

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For example, the clutch diaphragm on the 2½-ton GMC truck kept breaking if the clutch pedal was adjusted with the prescribed 1-inch free travel, so some units allowed 2½ to 3 inches of free travel, thus reducing the distance through which the diaphragm fingers traveled before the clutch was engaged. This increased the life of the clutch diaphragm.

The 2½-ton trucks, in particular, traveled over the hilly country in first and second gears; this caused the engines to operate above 180° temperature. This, in turn, caused the valves to burn out rapidly, especially the exhaust valve, resulting in a loss of power. The maintenance officer, knowing that a valve is cooled when it is in contact with the head, remedied the situation by increasing the clearance, thus allowing the valve to remain closed longer and cool. Serviceable 2½-ton engine heads were kept on hand to permit a rapid change.

These expedients resulted in new specifications. Clutch free travel on the 2½-ton GMC was changed to 2½ inches on a new vehicle, and valve clearance was changed to .012 for intake and exhaust valves.

Vehicles were carried from place to place many times if enough of the chassis was usable, because replacement was out of the question, and we all knew that nothing would be left behind; the old area was always policed. Conditions demanded prudence.

Tanks and wheeled vehicles that were damaged between the lines were usually recovered after dark; this was necessary because the enemy had good artillery with excellent observation from the air, and the enemy had control of the air. All movement took place after dark for the first months of the Tunisian campaign.

When word got around that the riders in ¼-tons were losing their heads by riding into a piece of steel wire stretched across the road, a piece of angle iron about five feet in length was welded to the front of all ¼-tons, with several notches at the top to engage the wire and break it. This, like the sandbags, was another early protective measure to save life.

Many times, after a vehicle struck a mine and was not immediately retrieved or guarded, the enemy would mine the vehicle. When a wrecker came to pick up the disabled vehicle, it, too, would be damaged. Too, there was always the danger of other mines close to the one struck. So in all cases, it was found best to go forward with a tow cable, fasten it to the disabled vehicle, and drag the vehicle away from the mined area.

Captain Edward M. Soloman's unit in Africa had no wrecker due to the lack of shipping space for the invasion, so when picking up disabled vehicles, one end of the vehicle had to be jacked up and chained to the rear bumper of a 2½-ton GMC, then the jacked-up wheels would be removed to prevent dragging over uneven ground. If a disabled ¼-ton had to be moved a long distance it was found that the most satisfactory method was to carry the vehicle in the bed of the 2½-ton truck. The disabled vehicle could be loaded by one man. This was accomplished by the use of a winch, one or two snatch blocks, an anchor, and a tree.

In Sicily the roads seemed to contain more than the usual number of shell fragments, and the number of flat tires increased. Once a tire was punctured by a shell fragment, it was worthless, and the replacement was nonexistent. The maintenance crews took all captured 20-inch tires and mounted them on our trailers. The enemy tires varied in outside diameters, and it was not known how much of a load they would stand; so they were used on the trailers, and the trailer tires used to replace the damaged vehicle tires. It was found practical at this time to establish a tire exchange in the vicinity of the S-4 installations.

Thus, some RCTs crossed Sicily by the courtesy of Nick Pirelli, since most captured tires were manufactured by the Pirelli Tire Company—Chicago associates unknown. Nick also made a fine contribution in the way of six-volt batteries.

The ¼-ton truck exhaust pipe extends from the left side of the engine down across in front of the transmission to the muffler on the right side of the vehicle. This resulted in a great deal of exhaust pipe which was very vulnerable, especially during cross-country operation. The pipe would be either broken or crushed. Crushing the pipe would increase the back pressure on the valves; this would cause the valves to overheat and the horsepower to drop. To remedy this, since the supply of exhaust pipes was limited, the flexible tubing used for a carburetor breather when going ashore through the water was brazed to the serviceable piece of pipe to join the exhaust manifold and muffler. In some cases, the muffler was omitted, and a straight exhaust was used down the left side of the vehicle. All kinds of drain and water pipes were used for exhaust pipes.

Every person who has used a ¼-ton truck for any length of time knows that the emergency brake cable, which is pulled and released by a handle in the dashboard, sticks very easily. Consequently, when the handle was released, the cable sticking in the conduit would keep the emergency brake band applied, and the result would be a burned-out brake band. To correct this cable failure, and to insure having an emergency brake, a short cable was installed, extending from the brake band through the floor to a handle at the right of the driver's seat. This worked very well, giving the vehicle a brake and increasing the life of the band.

In the mud of Italy, more flotation for tanks was a constant need. The answer was a track extension which is commonly known as a duckbill. The duckbill proved very satisfactory, and has now become standard equipment.

Some units did not have sufficient time to completely dewaterproof before going into action. Thus was discovered by accident a method of reducing the amount of dust normally raised by a tank. This method is to leave the exhaust stacks on the tank, so that the exhaust blast is directed upward into the open air rather than toward the ground.

The presence of the hedgerows in Normandy was recognized as a very serious obstacle, and vehicles were provided with satchel charges to enable the drivers to blow holes in the hedgerows. This was satisfactory in some cases, but it was useless if the area to be entered was occupied by the enemy. These hedgerows provided excellent cover and concealment for the enemy, resulting in heavy casualties to both armored and infantry units.

This situation called for immediate action; something had to be invented and developed right on the battlefield. Several types of tools were tried to see if they would cut through the hedgerows. The first was a series of prongs attached to the front of the tanks, both light and medium. These prongs worked on some hedgerows, but in the majority of cases the tank struck a maze of roots and had to withdraw rapidly before some enemy soldier had a rocket into its side. The prong hedgerow cutter was not the answer; something had to be discovered that would cut through the hedgerow on the first attempt. Many things were tried, and finally a satisfactory hedgerow cutter was evolved.

This cutter went into the row and cut the roots, allowing the tank to keep in motion, carrying the cutout portion of the row with it. Fashioning of the new and practical hedgerow cutter took a great deal of time and material, so in the beginning it was attached only to the lead tanks. All division maintenance units worked frantically to equip as many tanks as possible with the new cutter. Some crews scoured the countryside in search of usable metals, while others worked night and day making and installing the cutters.

There was always a crying need for batteries, and replacement was very slow; so one regiment maintenance organization established a battery rebuilding shop in conjunction with a radiator rebuilding shop. All old batteries were turned in to the rebuilding shop, and some items of equipment, along with some materials, were picked up from a battery shop in a liberated town; this gave the shop personnel a start, and from that the shop became a functioning unit.

Radiators were punctured by shell fragments and were subject to constant jarring due to the rough roads. The fragments damaged large portions of the radiators, which in many cases would have rendered the radiators unserviceable if the tubes had not been closed. In most instances, damaged tubes could be closed and still leave enough of the radiator functioning properly to cool the engine under all conditions encountered.

The ordinary chewing gum that was issued in the post exchange ration or K ration was used as a hasty expedient to stop a leak in a radiator or around an oil seal. In many cases, gum was pushed into holes in transfer cases and gear boxes to allow a vehicle to operate until it could be properly repaired.

GI soap was used in many cases to stop the abovementioned leaks, as well as leaks in gasoline tanks and oil pans. These two leak panaceas, gum and soap, were interchangeable.

It was found that in many cases the springs of the ¼-ton truck were not strong enough to support the load the vehicle was forced to carry. To prevent the constant breaking of springs, extra leaves were put in the springs, giving them greater strength, reducing the number being broken, and supporting the load in the manner a spring should.

In the 3d Armored Division a shipment of 76-mm guns was received before the tanks on which to mount the guns arrived. The only tanks the division had at the time mounted a 75-mm gun. The maintenance battalion experimented and found that they could mount the 76-mm gun in the M4 tank, thus giving it a greater punch with the superior gun.

A large bundle of logs was often held on the slope plate of an M4 tank by means of cables that could be released from within the vehicle. These bundles of logs were long enough to provide a road for the tank when necessary. The logs were usually released to fill tank traps and bogs under fire. A tank could run up and release a load of logs and pull to the rear; other tanks would repeat the procedure to fill a deep ditch.

Logs were fastened to the sides of tanks with wires and cables for two purposes: the logs provided a protective surface against panzerfausts and rockets, and they could be released to provide a road when necessary.

Captain Paul D. MacGarvey, maintenance officer of the 33d Armored Regiment of the 3d Armored Division, used the following expedients to keep his turrets operative during freezing weather. The rubber ring that was slipped over the gun barrel and down over the turret to waterproof the turret ring for the invasion of Normandy was further used in many cases to keep water out of the ring. This was most important during freezing weather because the ice would bind the turret and prevent it from traversing.

If the rubber ring was not available, gasoline was poured around the turret ring to prevent freezing during the winter; but this was an expensive and dangerous practice. Another method used to get the water out of the turret ring was to drill the turret deflector. This would allow the water to run out. The bottom of the brake housing cover of the manual traversing handle of the turret sometimes filled with water that leaked in around the hatch covers when they were closed. This water would freeze and make the manual traversing mechanism inoperative. To remedy this, holes were drilled in the bottom of the brake housing cover to allow the water to pass through; this became a standard modification for later tanks.

The side panels of the basket were cut out of the turret in the M4 series of tanks to permit the drivers to escape through the turret when necessary. Before this had been accomplished, the driver's only means of escape, after the vehicle had been put out of action, was through the driver hatches.

When more traction was needed for the M4 tank with a double-pin track every third connector was turned over so that the track guides were turned outside. The connectors dug into the snow, ice, and mud; this gave the vehicle more traction under such conditions. Tanks with single-pin steel tracks had much less traction than those with rubber tracks; when the ice and snow came, something had to be done in a hurry to increase their traction. This was done by welding to the tracks old wedges as well as pieces of old rod or irregular pieces of metal to dig into the ice and snow; this greatly increased the traction of the tracks.

In innumerable cases it was practical to weld nuts to keep them from coming loose because of vibration. This was true in the case of the hub nut on the M26. The rearmost support roller on the M24 tank often loosened, due to the slapping of the track coming over the rear idler; this was corrected by welding the bracket bolts heads to the bracket.

It was a good practice to boresight a gun fairly often to check the sight alignment with the tube. The best way to do this was to put cross hairs on the muzzle of the tube, and this took time. So, a fast method was devised by an ingenious tanker: He taped cross hairs on the front of an empty shell casing and removed the primer. This provided a rapid method of boresighting a tube under any conditions. The accuracy of this method varies with the relative length of the shell case to the length of the tube.

It is a very hard job to turn a track; each connector has to be driven off by force. This was accomplished with the aid of a bar and sledge hammer, until some enterprising tanker thought of employing the engineer air hammer to drive off the connectors. This reduced the backbreaking work and decreased the time needed to turn a track.

Near the end of the war, CCB of the 2d Armored Division was attempting to cross the Elbe River at Magdeburg, Germany. It was necessary to use DUKWs to transport antitank guns, ammunition, and reinforcements across the river. Artillery was still coming in, and shell fragments easily punctured the thin sides of the amphibs. Several vehicles sank, and others sustained damage which made them inoperable. As each vehicle was knocked out of action, it reduced the possible number of reinforcements that could be gotten into the bridgehead, and they were desperately needed. This called for immediate action; many DUKWs with punctured hulls had gotten ashore due to the capacity of their three pumps, but the vehicles were unfit to go out on the water again with a cargo, because one more hit would mean certain destruction.

Captain Ralph M. Wyse, maintenance officer of the 67th Armored Regiment, provided at the scene of the disabled DUKWs a shop truck, 2½-ton GMC, containing acetylene and electric welding equipment, and immediately began patching the holes in the hulls. This vehicle came from the maintenance company of the 67th Armored Regiment of the 2d Armored Division. Sheet metal immediately became a critical item and the initial supply was shortly exhausted. Pieces of sheet metal were cut from the hulls of totally disabled DUKWs; panels were cut from the doors of 2½-ton trucks; metal was gotten from all available sources; and the mission was again accomplished.

In the Pacific, as you know, there was a scarcity of everything but rain and Nips. So, to accomplish the mission all available sources were used; in many cases Mother Nature had to be relied upon as a source of material.

Bamboo stalks were cut at the joint and trimmed to fit, to serve as sediment bowls. Wood was soaked in water and in some cases was steamed, and was then riveted to the shoes of brakes to function as brake lining; it stood up well under the unusual condition of water and sand under pressure—really a wonderful abrasive, I would say.

Cannibalization was a common practice in the Pacific. In the assault of Leyte, eight tanks were knocked out by antitank fire, and seven were rolling in 24 hours at the expense of the most disabled of the eight. This is what I call efficient cannibalization by an experienced maintenance officer and crew, and not a worthless destructive practice by some novice. Captain Albert A. Todd was the motor officer of the 767th Tank Battalion on Leyte.

A bogged 2½-ton GMC truck could be extricated by fastening the end of a rope around a tree or some other kind of anchor, and using the dual wheels for a winch. The vehicle would pull itself free from the mire.

The damp air on the islands was laden with salt, and this proved most destructive to the electrical systems of all vehicles; so the lacquer spray issued in waterproofing kits was applied to the systems, being renewed wherever it was thought necessary.

The cables of 2½-ton GMC and wrecker winches were used in many cases to support a corduroy road for light traffic over what seemed to be a bottomless pit. The cable would be anchored by anchor bars, but in the case of heavy traffic a wrecker was gotten across first to carry the load. This corduroy road could be rolled up by a wrecker and carried for future operations.

The vines on the islands were everywhere, and they wound around axle housings and broke brake hoses to such an extent that in view of the poor replacement the vehicles often operated on one set of brakes. The other lines were plugged off; this held the pressure so that it could be applied to the bands where it was needed.

These are just a few examples of the various expedients used throughout the combat areas to accomplish a mission. In peacetime such expedients are seldom necessary, and the tendency is to forget those proved satisfactory and to minimize the type of instruction which encourages improvisation of expedients. Maintenance personnel should always be encouraged to direct their thinking along lines which will bring out their ingenuity. Those who were on the ground know that clear, original thoughts, and the ability to put them into practice, were of inestimable value in the accomplishment of the over-all mission—success in battle.

PLEASE TAKE ALL OF ME!

by Colonel Paul A. Disney

WELL, kiddies, here we are again, ready for today's lesson, the subject of which is just as you see it here on the blackboard, "Please Take All of Me."

The text reference will be a familiar one to all of you who haven't missed any Sunday School classes recently, namely, "Solomon and the Babe."

> "SOLOMON AND THE BABE"
>
> Solomon, the King of Israel, showed his wisdom in both small and great affairs. One day he was called upon to decide a dispute between two women who both claimed the same child. "I'll tell you what I'll do, ladies," said Solomon, "I'll divide the kid in two and give each of you half of him." Whereupon one of the women cried out and begged him to give the whole child to the other woman (thus showing that she probably had an MOS Number 1203*). She was rightfully indignant that her baby was going to have the devil split out of it—and as a consequence would probably be of very little value to either one of them, don't you think so?

Now, if you will get out your pencils, paper, rulers and erasers we will have a couple of little problems to see if we can be as smart as Solomon was.

The situation is this: You are the division commander of a nice, new INFANTRY DIVISION which has a big, shiny TANK BATTALION and three big, shiny TANK COMPANIES—one in each regiment. There is also going to be a nice dirty fight in a few days. Everybody in your division, even the quietest and most unassuming second lieutenant, infantry platoon leader, has suddenly become extremely raucous and vociferous in his demands for some tanks, just *any* tanks ("Sure I'll take two, or just gimme one"), for this little shindig that's coming up.

Your division is part of a corps of three infantry divisions. (Sorry—no armored divisions today.) By nefarious means you have been able to wangle a tank battalion (the 432nd) away from the Tank Regiment (Corps), although it has left the Corps Commander a tearful, broken man. Now, you have *two* big beautiful tank battalions for the attack. Your division will be on the right of a two-division front. The enemy is not too tough, but has had a chance to get himself dug in pretty well. He will be about your strength in your zone of attack which lies over gently rolling terrain, all of which is generally suitable for tank movement. A normal amount of cover exists in the form of small patches of woods and brush, farm buildings, etc. Good fields of fire exist for all weapons, and the road net is "adequate." (You saw it in France, Belgium, Holland, Germany, Central Luzon.) Here's the setup in the following (incomplete) overlay type operations order for the attack by your division, which we furnish free. (Don't expect this kind of treatment everywhere.)

1ST REQUIREMENT

a. Fill in paragraph 3 of the 50th Division Operation Order No. 4, as it applies to infantry regiments, tank battalions (organic and attached) and artillery battalions. Indicate attachments, if any.

b. Complete overlay part of Operation Order No. 4 to show boundaries between major units, and objectives of major units.

OK, so you "maxed it" (or did you?). Well, now you are the Regimental Commander of the 151st Regiment —the fair haired boy who drew the tank battalion for an attachment. (What does that guy *have* on the old man, anyway?)

Again you get a free picture (overlay on Operation Order No. 6, 151st Infantry Regiment), but only paragraph 2 of your Regimental Operation Order No. 6 for the attack. You have the 351st Tank Battalion of the division attached to you (remember?).

2ND REQUIREMENT

a. Fill in paragraph 3 of the 151st Regimental Operation Order No. 6 as it applies to infantry battalions, organic regimental tank company, attached tank battalion.

b. Complete overlay part of Operation Order No. 6 to show boundaries between major units, and objectives of major units.

Well, apparently you have the wisdom of Solomon (or did you peek first?). I had another problem for you, just in case you missed the solution to the first two. It dealt with the 153rd Regiment which got no tank attachments and fought with its organic tank company. Yes, the Regimental Commander attached the tank company to the right battalion. That gave a real armored, power-house on the right all the way through the division. The left battalion didn't squawk too much about not having any tanks, either. Why should they—they took a Sunday stroll up to the objective that forenoon after it had been taken by the "souped-up" elements on the right. Did anybody get a platoon of tanks, or a section of tanks, or one tank? Nope, not this deal. This was good tank country—no point "dogging along" here. Yes, these are "armored" tactics, battle-tested and proven successful. They are believed applicable to employment by the new infantry division. Why not try them?

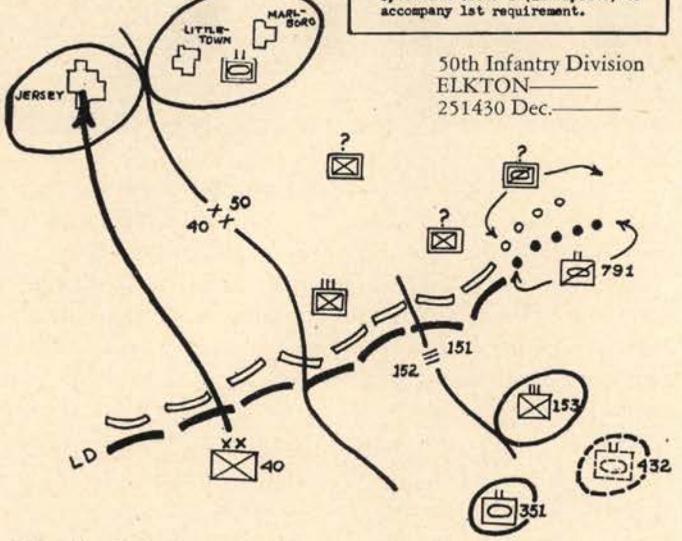
---

*You guessed it—Tank Unit Commander.

Colonel Paul A. Disney successively commanded the 2d Armored Division's 82d Armored Reconnaissance Battalion and 67th Armored Regiment during combat. He is at present a member of the Training Section at Army Field Force Headquarters. He is a regular contributor to and supporter of THE ARMORED CAVALRY JOURNAL.

1ST REQUIREMENT

Operation Order 4 (Incomplete) to accompany 1st requirement.



50th Infantry Division
ELKTON———
251430 Dec.———

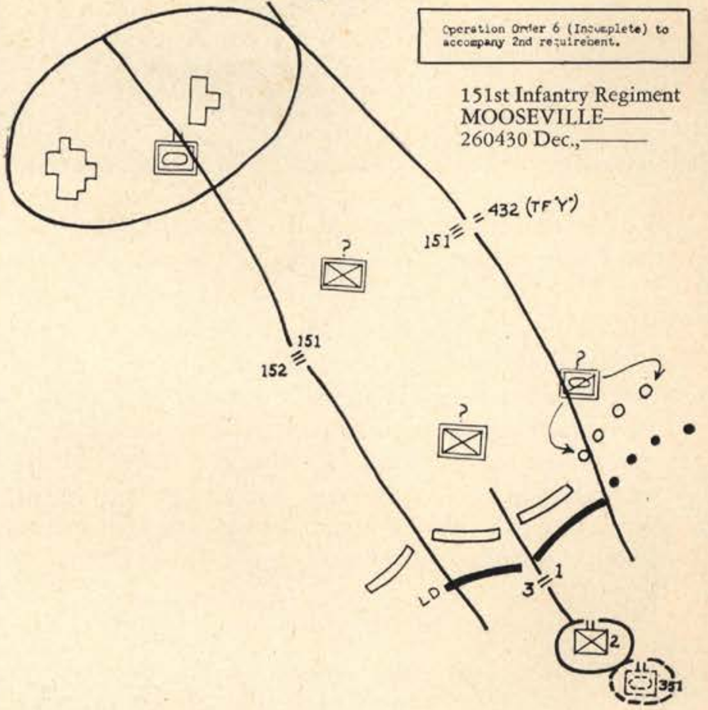
Operation Order 4
Maps: (Omitted)

1. I Corps attacks 270630 Dec., captures MARLBORO, LITTLETOWN, JERSEY.
2. Division (reinforced) attacks 270630 Dec., envelopes enemy east flank, captures MARLBORO, LITTLETOWN, assists 40th Division capture JERSEY, corps order.

* * * * * * * *

2D REQUIREMENT

Operation Order 6 (Incomplete) to accompany 2nd requirement.



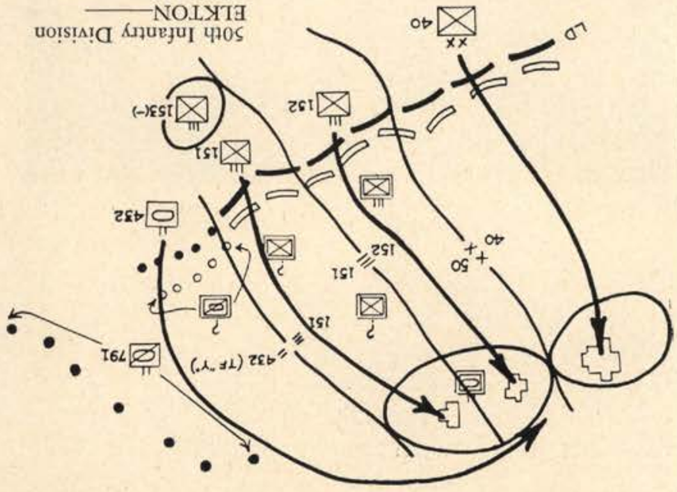
151st Infantry Regiment
MOOSEVILLE———
260430 Dec.,———

Operation Order 6
Maps: (Omitted)

1. * * * * * * * *
2. Regiment (reinforced) attacks 270630 Dec., captures MARLBORO. Assists 152d Infantry capture LITTLETOWN, division order.

* * * * * * * *

SOLUTION TO 1ST REQUIREMENT



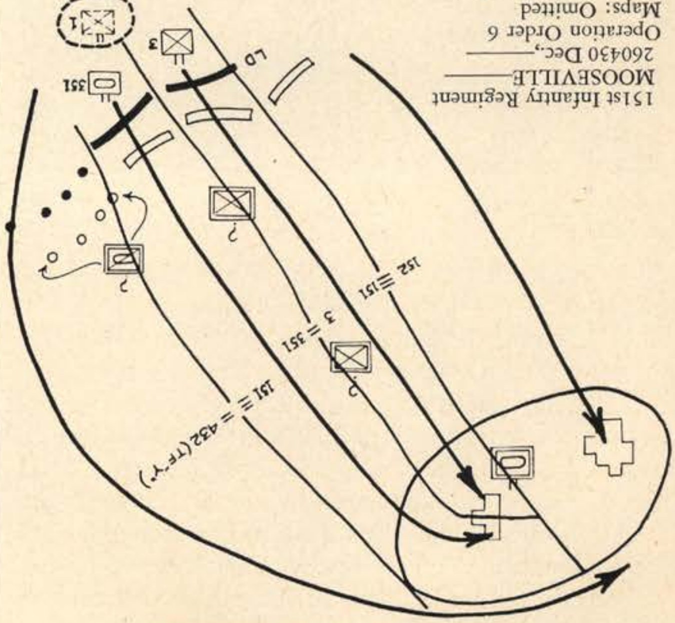
50th Infantry Division
ELKTON———
251430 Dec.———

Operation Order 4
Maps: (Omitted)

1. I Corps attacks 270630 Dec., captures MARLBORO, LITTLETOWN, JERSEY.
2. Division (reinforced) attacks 270630 Dec., envelopes enemy east flank, captures MARLBORO, LITTLETOWN. Assists 40th Division capture JERSEY, Corps order.
3. a. 151st Infantry. Attached: 351st Tank Battalion. Assist 152d Inf. capture LITTLETOWN, division order.
   b. 152d Infantry. Assist 151st Infantry capture MARLBORO division order.
   c. Division Artillery: 251st Field Artillery Battalion: Direct support 151st Infantry
      252d Field Artillery Battalion: Direct support 152d Infantry
      253d Field Artillery Battalion: Attached to 432d Tank Battalion (TF"Y").
      254th Field Artillery Battalion: General support.
   d. ***************
   e. 351st Tank Battalion attached to 151st Infantry.
   f. 432d Tank Battalion: Attached 252000 Dec. (TF"Y")
      Attached: 2d Battalion 153d Infantry
      253d Field Artillery Battalion
   j. 253d Infantry (—2d Battalion): Division Reserve

* * * * * * * *

SOLUTION TO 2D REQUIREMENT



151st Infantry Regiment
MOOSEVILLE———
260430 Dec.,———

Operation Order 6
Maps: Omitted

1. * * * * * * * * *
2. Regiment (reinforced) attacks 270630 Dec., captures MARLBORO. Assists 152d Infantry capture LITTLETOWN, division order.
3. a. 1st Battalion.
      Attack in present zone until passed through by 351st Tank Battalion (reinforced).
   b. 3d Battalion.
      Attached: Tank Company.

   * * * * * * * *

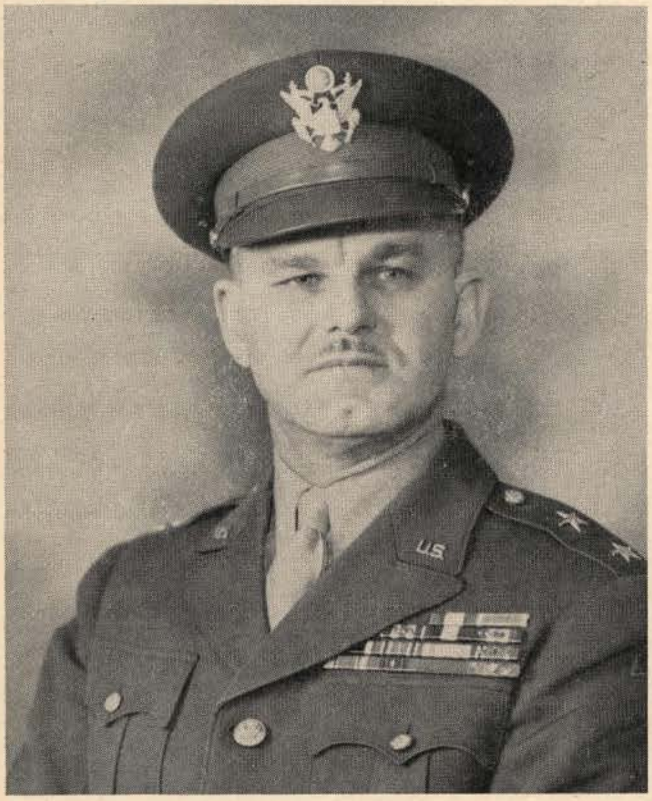
   e. 351st Tank Battalion
      Attached: 2d Battalion
   g. *1st Battalion:* Regimental Reserve, after passage of 351st Tank Battalion (reinforced).

Editorial Comment

A Change of Command at Armored Center

Mid-June will bring a change of command at The Armored Center at Fort Knox, Kentucky, when Major General John W. Leonard departs for his new assignment as military attache in London, turning over his post to Major General William G. Livesay.

General Leonard terminates a two-year tour entered upon from a background as wartime commander of the 9th Armored Division, the organization that contributed to a distinguished battle record by capturing intact the famous Ludendorff Bridge over the Rhine River at Remagen, Germany.



Major General John W. Leonard

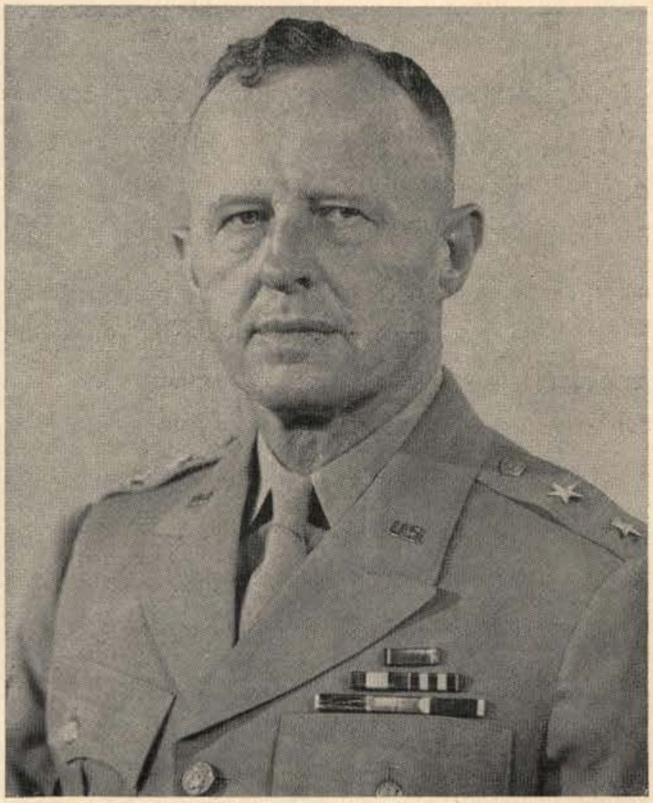
Several months after the windup of European hostilities, General Leonard left the 9th Armored to take command of the 20th Armored Division in California. This was one of the divisions slated for Operation Coronet, the invasion of Japan via Tokyo Harbor.

Following deactivation of the 20th Armored, General Leonard moved in April of 1946 to command of the 2d Armored Division at Camp Hood, Texas. In July of that year came the assignment to The Armored Center.

During the period of his incumbency many changes have taken place at Fort Knox. The Armored Center was reactivated under General Leonard's command on 1 November 1946. Shortly thereafter came the activation of the Universal Military Training Experimental Unit. In July of 1947 the 3d Armored Division was reactivated at Fort Knox as a training division.

The two-year period has seen the broadening of The Armored School curriculum to include division level general staff instruction previously available only at the Command and General Staff School at Fort Leavenworth.

A reconversion program has increased the quarters available for officer and enlisted personnel from 1147 to 1616. The Patton Museum was established at Fort Knox around the nucleus of several trainloads of European arms and military equipment, including armored vehicles, artillery pieces, tanks, self-propelled guns, small arms, uniforms, radio and signal items and ammunition specimens. Under General Leonard's supervision Patton Museum has expanded with donations from interested sources, including his own contribution of the original sign from the Ludendorff Bridge, "Cross the Rhine With Dry Feet Courtesy the Ninth Armored Division."



Major General William G. Livesay

Under General Leonard's command Fort Knox has developed into a model army installation, a focal point of major military interest today. The blend of progress in academic, technological, instructional and experimental fields is a substantial contribution to the effectiveness of our ground forces. The interest in the Armored Center is evidenced in the attention granted it during the period from July 1946 to April of this year, when well over eight hundred American military and civilian official visitors and nearly three hundred fifty foreign military visitors representing twenty-six countries were received by General Leonard.

The ARMORED CAVALRY JOURNAL takes this opportunity to extend to General Leonard its sincere thanks for his cooperation and help and best wishes for continued success in his new assignment.

General Livesay was wartime commander of the 91st Infantry Division, which made such a fine record in the Italian Campaign. Upon inactivation of the Powder River Division, General Livesay served successively as a member of the War Department Military Education Board and Commanding General of the Seventh Service Command.

With the organization of the agencies to implement the Truman Doctrine, General Livesay assumed command of the military section of the American Mission to Aid Greece. He has recently returned from that post, and will assume command of The Armored Center in mid-June upon General Leonard's departure.

* * *

One Journal—One Association

The Armored Cavalry Association has recently received a proposal from the Infantry Association relative to a merger of the Field Artillery, Coast Artillery and the Armored Cavalry Associations with the Infantry Association.

Their proposal is as follows:

(1) To reincorporate the U. S. Infantry Association as the Association of the Army of the United States, under Section 29-604 of the District of Columbia Code.

(2) To change the name of the business corporation to "Army and Infantry Journal, Incorporated."

(3) To change the name of the Infantry Journal to "Journal of the Army, with the Infantry Journal, Armored Cavalry Journal, Field Artillery Journal, Coast Artillery Journal."

(4) To have each of the above-mentioned Journals transfer all of their assets to the Association of the Army of the United States, which would then assume all of our liabilities.

(5) To accept our members as full members of the Association of the Army of the United States.

(6) To have the named Armored Cavalry Journal appear on the cover of the proposed magazine "Journal of the Army." However it is to be understood between the Associations that simply in order to protect the present very good will inherent in the words "Infantry Journal," the words "Infantry Journal" would appear in substantially larger type than the words "Armored Cavalry Journal," "Field Artillery Journal," "Coast Artillery Journal."

(7) To expand the new monthly magazine to include articles of general interest as well as technical articles on Armored Cavalry, Field Artillery and Coast Artillery.

(8) In the reincorporation to the Association of the Army of the United States, to have the President of the Armored Cavalry and other Associations, become initial members of the Executive Council of the new Association.

(9) To have the present Armored Cavalry Association and others, take proper steps to dissolve.

General Haislip, the President of the Infantry Association, further stated in his letter to the President of the Armored Cavalry Association that these proposals are *not* presented in an inflexible manner and are tentative and open to the fullest discussion. But "it is the unanimous conviction of the present officials of the U.S. Infantry Association and the Infantry Journal that they should take the lead in forming the Association of the Army of the United States, the better to foster the spirit of the Army's combat forces and the interests of the fighting soldier. It is their further belief that the cooperation of other existing military association of similar aim should be invited on the basis of full participation of their membership; *but that if, regrettably, such participation should not be achieved, The Infantry Association should, through action of its own membership, become an Association Army wide in scope,* to be known as the Association of the Army of the United States."

General Haislip's letter also states "we have talked to many officers about the *general* idea of an Association of the Army of the United States, *though we have not presented any detailed scheme of merger to them but simply asked them* whether or not they think there should be such an association. Many general officers were among those thus *informally* consulted and were, without exception, highly favorable to the idea."

The Executive Council of the Armored Cavalry Association, at a recent meeting, studied the proposal as outlined in General Haislip's letter and arrived at the following conclusions:

(1) That the Armored Cavalry Association should support, both in spirit and action, the principles of unification in our armed forces—and

(2) that if the consolidation of the service Journals and their respective Associations into one association and one Journal would further those principles and provided—

(3) that this consolidation can be accomplished by equitable methods acceptable to all concerned, it should be given favorable consideration.

However, there are a few details in the Infantry Association's tentative proposal that need careful consideration before such a drastic step should be taken; and to which our Executive Council takes exception. They are as follows:

(a) The name of the new association should be indicative of its membership. The proposed name is too all-inclusive considering the fact that only *four* of the entire group of service associations and journals now in existence are being considered in the merger.

(b). The name of the proposed business corporation "Army and Infantry Journal, Incorporated" would submerge the names of all other journals, yet would keep the name of "Infantry Journal" for posterity.

Whatever the name of the business corporation would be, it is obviously unfair to include "Infantry" and exclude the names of the others.

(c) The name "Infantry Journal" on the heading of the new journal should not appear in substantially larger type than the names of the other journals. If unification is the keynote, none of the former journals' names should appear. On the other hand, if it is felt of sufficient importance to carry the former journals, then the names of each one should appear in the same size type (however, a letter or notice of explanation in the last issues of the present journals and in the first few issues of the new journal, would sufficiently inform the readers of the change). Unless commercialism *is* an important factor, the good will of all journals should be equally subservient to unification.

(d) The new journal must be of adequate size to include the number of technical articles that the readers of the separate service journals now enjoy, and to which they are entitled as subscribers.

(e) Only *initial* representation on the council of the new association is offered. This representation must become permanent, not only on the council of the association, but on all of the governing boards that may be created in the publication of the journal as well as the editorial staff. Inasmuch as the publication of a journal is basically the purpose of all associations, it is absolutely essential that each branch of the service be guaranteed equal representation on various staffs as well as in reading matter contents.

(f) The Council is interested in knowing whether or not the general officers who were approached informally by the Infantry Association and who were all in favor of the idea of a merger were made fully aware of the details as they were submitted to the Armored Cavalry and other Associations. If not, we wonder if they would still be favorable to a merger under the conditions as submitted to us and the other associations?

Before presenting the question of a merger to the members of the Armored Cavalry Association for their decision, our Council believes that the foregoing ideas should be clarified by the Infantry Association. In addition to this, we should know what action the Infantry Association would consider taking on the suggestions that the Armored Cavalry Association has outlined.

In informal discussions with a number of our members, the following questions inevitably are asked:

(1) What do I get as a member of the new association and Journal that I do not already receive as a member of the Armored Cavalry Association and subscriber to the Armored Cavalry Journal?

(2) What does the proposed association and journal plan to do, to assure me and my association that they can improve my own professional knowledge, both in the particular branch to which I am now assigned or to which I may be assigned in the future?

(3) Will this contemplated merger carry out the spirit of unification to a greater degree than that which my own association and Journal can hope to achieve, thus contributing to the general morale and efficiency of our armed service?

A letter embodying the information as discussed by our Executive Council and outlined herein, has been sent to the President of the Infantry Association with a request that representatives of the associations interested meet at a conference in the near future to discuss the proposed merger.

It is hoped that we can present further details and information relative to any new developments in our July-August issue. In the meantime, we would be glad to receive any comments from our members on the proposed merger.

* * *

General Harmon Resigns Presidency

At the annual meeting of the United States Armored Cavalry Association held in January, Major General Ernest N. Harmon was elected president of the Association. Recently General Harmon has retired from active duty. In a letter to the Association he has expressed his appreciation and has requested that his resignation as president be accepted in view of circumstances obviating his active participation in Association activities. The Executive Council, meeting in special session, has announced that Major General Hobart R. Gay, elected to the vice-presidency in January, will assume the duties of president for the period up to the next election.

DATES TO REMEMBER

2 May: Victory Italy Day

8 May: Victory Europe Day

16 May: I Am An American Day

30 May: Memorial Day

14 June: Flag Day

OTHER BRANCHES

Major General Kenneth F. Cramer

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(Editor's Note: The next issue of the JOURNAL *will be an all armor number. This section will be devoted to an appreciation of the part played by other branches in the armored team.)*

Traditionally, the National Guard was intended to serve as a reserve component of the Army of the United States, achieving full status only when called to Federal service by the President of the United States.

The new National Guard, however, is designed to operate as the first line of defense in case of enemy aggression. Its units will maintain strength comparable to those of the peacetime Regular Army and Air Force —100 per cent officer and 80 per cent enlisted men— and they will be ready to take the field, fully armed and manned, on very short notice.

The nature of modern warfare, characterized by air power and guided missiles, demands a defense which is highly mobile and widely deployed—a defense which can act quickly and simultaneously in widely separated areas.

Such a defensive force must consist of all arms, including radar warning units, interceptor squadrons, anti-aircraft batteries, armor, cavalry, artillery, and infantry. These units must be equipped, trained, and ready to go into mobile action on a moment's notice. The next act of war will probably come without warning and may hit at our vitals—not our outposts.

The new National Guard has been given the mission of providing such a defensive force. To carry out this mission, a program is now well under way to organize the largest peacetime military organization manned by civilians in the history of the United States. A firm foundation has already been laid. As of March 15th, 231,042 officers and men had been enlisted and 4,222 units had been Federally recognized. However, we have a long way to go to reach our full strength of 683,270 in 6,369 units.

I welcome this opportunity to tell the story of the new National Guard to readers of the Armored Cavalry Journal. We need their understanding and cooperation to assist the Guard in fulfilling its mission.

Kenneth F. Cramer

Brigadier General, U. S. Army,

THE NATIONAL GUARD— OUR MODERN MINUTEMEN

by Major General Kenneth F. Cramer

FAMOUS battle flags have been broken out and are flying from every armory the length and breadth of the nation. The National Guard is back on its traditional job—securing America's defenses in time of peace by preparing America's men for a possible future emergency. Never since frontier days when quick, stealthy, murderous Indian attacks wiped out whole communities has the United States had such need for a well-trained, heavily armed and widely deployed civilian army. For, like Indian attacks of old, aggressions of the future will be undeclared, sudden, and deadly. The United States needs modern Minute Men in order to survive.

The new National Guard has been called upon to furnish 683,000 Minute Men to serve in 25 Infantry Divisions, 2 Armored Divisions, 21 Regimental Combat Teams, 123 Anti-Aircraft Battalions, 45 Field Artillery Battalions, 72 Fighter Squadrons, 12 Light Bombardment Squadrons, and necessary supporting troops in every State of the Union, the District of Columbia, the Territory of Hawaii, and Puerto Rico. Furthermore, this total M-Day force, capable of immediate mobilization in case of attack, is to be ready by 1952.

This new National Guard represents the largest peacetime military organization manned by civilians that the United States has ever possessed. In view of its defense mission, the United States can afford no smaller.

The first citizens of this country protected their right to bear arms by the 2d Amendment to the Bill of Rights which reads:

"A well regulated Militia, being necessary to the security of a free state, the right of the people to keep and bear arms shall not be infringed."

Legislation in 1795 and 1798 provided for Federal use of this State Militia and these local volunteers. A law in 1808 inaugurated the practice of providing annual Federal aid to the States for the support of their forces. This practice continued throughout the 19th Century under the strong supposition that the Militia would ultimately be employed in National Defense. As you well know, this strong supposition once again became a proven fact early in the 20th Century.

Of all legislation passed by the Congress for the purpose of increasing the efficiency of the Militia, two bills were outstanding in their effect upon the military establishment of the United States. First, the Dick Bill, which was introduced in 1903 by Major General Charles Dick, United States Senator from Ohio, gave the Federal Government authority to use National Guard troops in any theater of war. This Bill was really but one phase of Elihu Root's general program to reorganize the military establishment after the Spanish-American War and became actually effective some years later with the enactment of the National Defense Act of 1916, as later amended in 1920. This Act provided for local volunteer units, raised and housed by the States, but formally recognized and given drill pay by the Federal Government.

Sparked by local spirit and aided by Federal cooperation, the National Guard came a long way along the road to military efficiency. When World War I was declared, the National Guard was a well organized and adequately trained tactical force. Its regiments had only to be redistributed into combat divisions and it was ready for service in the AEF of 1917-18. All in all, the National Guard furnished the country with 17 divisions and other organizations which were manned by over 300,000 Guardsmen.

The fighting worth of these divisions was more than evident upon the battlefields of Europe. They comprised two-fifths of all divisions in the AEF and of 25 which saw combat, 11 were National Guard. These 11 spent more days in combat than did either the Regular or National Army Divisions. The German Imperial Staff rated only 8 American Divisions "superior" or "excellent." Six of these divisions were National Guard. Who can forget the 32d—first to break the Hindenburg Line, and nicknamed "Les Terribles," or the 28th which rescued the Lost Battalion in the Argonne, or the 26th which earned more combat decorations than any other Guard Division.

The value of Guard contributions to the successful prosecution of World War I was illustrated by its formal designation in 1933 as the National Guard of the United States and its assignment as a reserve component of the Army of the United States.

Once again when war came in 1941 the National Guard was ready. Between September 1940 and 1942 a total of 300,000 were inducted into Federal service. The Guard put 18 combat divisions and many separate units into the field. These units trained Selective Service men equal to about half their own number, and furnished something like 100,000 officers to the Army of the United States from their own officer corps and from their enlisted men. For example:

1. One division furnished one regiment of infantry at war strength, to complete a Regular Army division; one regiment of infantry and a battalion of field artillery, as a separate task force; sufficient commissioned

and enlisted cadres for three new divisions. In August of 1942 the strength of this division was less than one-third its original strength.

2. Another division furnished three regiments of infantry and one battalion of field artillery, at intervals of about 90 days, for special task forces. This in addition to commissioned and enlisted cadres for two new divisions. Two new regiments of infantry were organized from other cadres. Only one original infantry regiment remained with the division.

Despite this constant drain of experienced personnel, a National Guard Division was on its way overseas within one month from the declaration of war. Within five months, 5 National Guard divisions were already in the Southwest Pacific Area. Names of Guard Units appeared prominently and with distinction in the fiercest engagements of the war—Bataan, Guam, the Philippines, Bizerte, Salerno, Cassino, Anzio, Omaha Beach, the Ardennes Forest. The price was high. The 29th and 34th Divisions each suffered more than 20,000 casualties and the average for all National Guard Divisions was 9,166.

They received more than their share of honors. More than 100 Presidential Unit Citations were awarded Guard outfits and 14 National Guardsmen were awarded the Congressional Medal of Honor, the country's highest decoration.

This is, in part, the proud record of the National Guard. It is a story of tremendous accomplishment in time of dire national emergency. However, the story is not at an end.

Realizing that demobilization of the Army would virtually strip the country of its defenses, a committee composed of 5 Regular Army and 5 National Guard officers was appointed in August 1944 for the purpose of coordinating all postwar planning for the Guard. By July of 1945, the committee had submitted a series of recommendations concerning mission, strength, composition, organization, distribution, personnel, training, and maintenance of efficiency. These were considered by R.A., N.G., and Reserve officers and were approved in final form October 13 by the Secretary of War under the title "War Department Policies Relating to Postwar National Guard."

These policies form the basis of the new National Guard and bring some entirely new concepts of civilian-soldier defense into the military establishment of the nation. No longer is the Guard primarily a reserve component of the Regular Army. It has become the first line of defense charged with the responsibility of immediate mobilization to war strength and immediate execution of necessary action in case of enemy aggression. In full, the new National Guard must stand ready:

"To provide a reserve component of the Army of the United States capable of immediate expansion to war strength, able to furnish units for service anywhere in the world, trained and equipped:

"First, to defend critical areas of the United States against land, seaborne or airborne invasion.

"Second, to assist in covering the mobilization and concentration of the remainder of the reserve forces, and

"Third, to participate by units in all types of operations, including the offensive, either in the United States or overseas."

In order to fulfill the responsibility imposed by this mission, the new National Guard must be a large, well balanced, self-sufficient, well trained, and widely deployed civilian army comprised of every type of modern arm.

Plans for the new Guard, as approved by the Secretary of War, indicate that this new force will be able to fulfill its mission. The component units are being given authority to organize with respect to their importance in fielding a fighting force as quickly as possible: first divisions and appropriate air units, then regimental combat teams, then anti-aircraft artillery and signal aircraft warning units, and finally non-divisional combat units of the type generally used to reinforce divisions.

Within 60 days of receiving specific authority to organize from the Chief of the National Guard Bureau, the State must present its unit for Federal recognition with a strength—if it is a line unit—of 25 per cent officer and 10 per cent enlisted. From that date on, the unit is required to grow over stage periods of three months each in accordance with the following Stage Table:

Stages	*Officers and Warrant Officers*	*Enlisted Men*
I	25%	10%
II	30%	20%
III	40%	30%
IV	50%	40%
V	60%	50%
VI	70%	60%
VII	80%	65%
VIII	90%	70%

The new National Guard will be widely deployed. First, units of various types will be organized in every State, Territory, and the District of Columbia. Second, because the greatly increased strength would work hardship on many States, unit allotments were assigned on a manpower ratio basis—the ratio of men between the ages of 18 and 35 in any given State to the total population of males in that age bracket residing in the country.

Thorough training will be insured by the large number of veteran officers and noncoms who will lead the new Guard; by the close cooperation of the Regular Army as evidenced by the assignment of instructors to Guard units; by the opportunity of Guard officers and men to attend Regular Army Service schools in all echelons; and by the most modern equipment with which the Guard is to be armed.

The National Guard Training Program is so planned that each unit will be completely trained and ready to carry out its assigned mission six years from date of Federal recognition. The first two years are known as "Interim Training" during which the unit will be coming to full strength and training will not exceed company level. The next four years are divided into three phases with heavy emphasis on field tactics. Two years will stress tactics not higher than a battalion level. The next year will be spent on the Regiment with division training taking up the last and 6th year of the Training Program.

So far in this article, the new National Guard has been discussed as if it were still in the future. On the contrary, the United States right now has a Guard which boasts more men, 231,043, and more Federally recognized units, 4,222, than the average prewar Guard could. This dramatic growth has all taken place since June 1946, when the first air unit was recognized, and August 1946, when the first army unit was recognized.

Two complete Divisions are already in existence—the 45th of Oklahoma and the 43rd of Connecticut, Rhode Island, and Vermont. Moreover, there is every reason to expect that a total of 15 Infantry Divisions, 15 Regimental Combat Teams, and one Armored Division will have all component units Federally recognized by June 30 of this year.

Even more gratifying has been the growth of the Air National Guard. Fifty-five fighter squadrons have been put into operation flying P-51 Mustangs and P-47 Thunderbolts. Three squadrons are scheduled to begin receiving jet-propelled P-80 Shooting Stars this year. Nine Light Bombardment Groups flying A-26 Invader type of planes have also been put into operation and it is expected that every air tactical unit will gain Federal recognition by the end of June 1948.

This remarkably swift growth in strength and number of units is only one indication that the new National Guard really means business. Since reorganization began the National Guard Bureau has ordered distribution to the States of approximately half a billion dollars worth of clothing and individual and organizational equipment for Army units. Another quarter of a billion dollars in equipment has been issued to Air units of the Guard. Guard Technical Services have an estimated half-billion additional dollars of equipment on hand and it is expected that another billion dollars will be required to fully equip Army units of the Guard at their full, authorized strength of 623,000 men in 5,857 units.

Translating these figures into material items, the Guard has procured 33,000 of the 86,000 general purpose vehicles required for anticipated full strength. Of those procured, 1,000 have been issued to the States in RFI (ready for issue) condition, 7,000 NRFI (not ready for issue) are being held in Technical Services, and nearly 25,000 NRFI vehicles have been issued and are being put into shape in National Guard shops. July 1, 1948 is the target date for completing this extensive vehicle rehabilitation program.

Practically the entire small arms requirement for full troop basis, 880,000, are on hand. Of 7,521 artillery pieces required for full troop basis, 2,339 units are in RFI condition. Forty-eight 120-mm Anti-Aircraft guns are in repair shops and scheduled to be ready by the end of the calendar year.

By March 15, 1948, a total of 1,994 planes had been assigned to Air units. 771 were P-51s, 431 were P-47s, 318 were A-26s—all tactical aircraft. In addition, some 423 liaison planes were also issued. Forty-seven were L-17s or Navions and 376 were L-16s or Aeroncas. (This total airpower is in sharp contrast to 400 O-38 and O-47 observation planes which constituted the Guard air arm before the war.) The new National Guard has tactical Air units located on 65 installations in the Continental United States and two in the territories. These installations have an estimated total replacement value of $800,000,000 and it is expected that this sum will reach the billion dollar mark when the balance of tactical air units are organized and activated.

Of course, no defensive force could succeed without the speed, mobility, and heavy fire power of Armored Cavalry units. They constitute a highly important part of the new National Guard. Each infantry division will have a Cavalry Reconnaissance Troop as an integral part of its organization. The two armored divisions will each have a Cavalry Reconnaissance Squadron, and in addition there will be 15 separate Cavalry Reconnaissance Squadrons located in 12 States. The separate squadrons are composed of a Headquarters and Headquarters and Service Troop, three Reconnaissance Troops, one Assault Gun Troop, and one Light Tank Company. California, Texas, and New Jersey, having more than one Squadron allotted to them, will have a Headquarters and Headquarters Troop Cavalry Group Mechanized.

The old spirit of the Cavalry must have contributed greatly to the success of the difficult transfer from horse to armor. The alacrity with which armored cavalrymen have responded to their country's need is highly illustrative of America's spirit. Where twenty short months ago there was nothing—today the United States has a sturdy framework of defense. This philosophy of offering personal service in protection of home and country has characterized Guardsmen ever since the days of colonial militia.

Considering the type of aggression we can expect in the future, the United States is indeed fortunate that succeeding generations have followed the traditional concept of national defense. The new National Guard, comprised as it is of local units, raised and housed by the State, armed and supported by the Federal government, is admirably adapted to counter enemy action without fatal delay. Add to this—volunteer spirit, local leadership, and the Guardsman's sure knowledge that he fights for his own home and family—and it is obvious that America has the essentials of an indomitable defense.

COUNTERINTELLIGENCE

CARDED

CIC: Security Specialists

by Captain William J. Jacobson,★

THE Russians had a word for it—SMERSH—or death to Spies. It was the name of their military counterintelligence organization in World War II. Less dramatic, and without the dire connotations of the Russian secret police, is the United States Army's Counter Intelligence Corps—the CIC.

The CIC is a military organization established to detect or prevent espionage and sabotage and to investigate cases of treason, sedition, disaffection and subversive activities within the military establishment. Expressed more simply, CIC is an agency specializing in security and available as a service to help commanders carry out their counterintelligence responsibilities.

Counterintelligence is a responsibility of command and pertains to every level of the Army. Present and foreseeable circumstances make necessary a more thorough understanding of this responsibility than has been the case heretofore. An important part of any such reorientation is the knowledge that counterintelligence is the tactic of good security and that the Counter Intelligence Corps, the counterintelligence investigative agency of the Army, provides the commander with troops trained specifically for this mission.

Maintenance of military security—like any preventive task—if perfomed properly, results in a negative report. Doing nothing about security also results in a negative report—often—but not always. Because security risks are often beyond calculation, a thorough knowledge of counterintelligence and the Counter Intelligence Corps is contingent upon every officer in the Army.

Counterintelligence is no small job. It is big and as important in peace as in war. It requires safeguarding military security and the loyalty of personnel employed by the Army. In fulfilling this mission, the commander and his G-2 evaluate counterintelligence and take appropriate action on the information in the same manner as they do on combat and other positive intelligence. But it is in the collection of counterintelligence that a sharp difference arises.

Counterintelligence is not there for the taking. It must be ferreted out in spite of skilled and hostile efforts to conceal it. Investigation must be done in an unobtrusive and often surreptitious manner, for much of the value of counterintelligence lies in the fact that its possession is not known to the enemy or potential enemy. No two counterintelligence investigations are exactly alike—today's case may require a legal expert; tomorrow's an undercover agent who can speak Korean. Operational procedures must be exceedingly broad. Close supervision of personnel is often impractical. Success depends largely on individual training and initiative. The scope and the nature of counterintelligence operations make it necessary to provide the commander with personnel possessing a diversity of special skills and qualifications—each individual a highly trained investigator.

An example of the unusual skills that may be required in counterintelligence investigations occurred in Manila shortly after the recapture of the city. Informants advised CIC that a group of unsavory characters suspected of collaboration with the Japs, were looking for an experienced seaman who knew how to operate deep-sea diving equipment. Suspecting underwater sabotage of army transports cluttering the harbor, a CIC Agent familiar with dredging operations was given the assignment. Placed undercover, he was instructed to see what this group was up to . Three weeks later the agent had become a member of a gang aboard a dilapidated craft at anchor on the outer edge of Manila Harbor. The crew was busily dredging up a mud-covered but rich cargo consisting of cases of silver which the Philippine government had dumped into the harbor before the Japs first took Manila. Overhead a small plane, piloted by a CIC officer, circled idly. The undercover agent on the boat casually slipped off his T-shirt and shook it in the air. At this signal the pilot in the plane sent a quick radio order to shore. In minutes, CIC boats raced out, surrounded the dredge and swarmed aboard. The would-be dredgers were quickly arrested, the silver recovered and turned over to the Philippine government and later the same day the undercover agent was back working on the routine investigation he had left three weeks before.

In selecting personnel for CIC, great efforts are made to find men possessing varied or unusual skills. But individuals are not selected solely on this basis. Each applicant must first be a potential investigator.

This is no new departure. The basic requirements have been almost the same ever since two months after the AEF had arrived in France when General Pershing put in a call for military investigators to make up a group known then as the Corps of Intelligence Police. The Corps numbered over 700 people by the end of

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★Special Agent, CIC.

World War I but, in the 20s and 30s dwindled to a mere token force of 17 sergeants. But by the time of Pearl Harbor, this organization had already grown again to a strength approaching a thousand and had been redesignated the Counter Intelligence Corps.

In World War II CIC attained a strength of several thousand and saw service with every type of ground and air unit in all Theaters. The fact that the enemy's strategy of fifth column activity, sabotage and subversion—so successful elsewhere—failed miserably where the US Army was concerned, was no accident. It was the full-time job of the CIC to see that it did. The complex political environment of many combat operations, and problems created by our large-scale occupation overseas created new and expanded uses for the CIC, many of which are still performed today. The Corps also won its share of combat commendations. Its less overt operations—such as safeguarding the security of the atom bomb—won equal, if unpublicized, praise.

Despite its name CIC is not a corps in the official sense. It is a field agency of the Director of Intelligence. CIC personnel are within his assignment jurisdiction but the using command exercises operational control under broad policies established by the Department of the Army. The staff advisor of the Director of Intelligence on CIC matters is the Chief, CIC, who is responsible for the selection, training and administrative supervision of the Corps. These activities are conducted at the CIC Center, Camp Holabird, Baltimore, Maryland, where the Headquarters of the Chief and the CIC Specialist School are located.

During the war CIC had little difficulty finding individuals with the requisite high qualifications for CIC duty. A not unusual example of the type of persons assigned to CIC in those days was the Eighth Army CIC Detachment. This group of men included an editor of *The Kansas City Star,* the superintendent of Illinois schools, three lawyers, two New York City police detectives and a senatorial committee counselor. Among them they spoke more than ten languages including Filipino dialects, Japanese, Russian, Siamese and Urdu. Today, although the Army does not possess the wealth of potential CIC agents it formerly did, every effort is made to procure personnel of the same high standards. Experience has proven that the quality of the Agent is almost invariably the key to success in any counterintelligence operation.

The major source of personnel qualified for CIC duty is from enlistment. In order to attract the desired type of CIC applicant the Department of the Army has authorized direct enlistment for duty with the CIC in grades above those normally prescribed. The remainder is procured by volunteer transfers from within the Army or by re-enlistment. Since investigative experience is considered one of the most valuable assets of the Corps, every attempt is made to encourage enlisted men to make CIC their Army career. To retain especially capable enlisted agents, direct commissions were, and warrants still are, offered. This is especially important since Regular Army CIC officers are not permanently assigned but merely detailed to the Corps for a three-year tour. The present core of CIC officer strength is composed of Military Intelligence Reserve officers on extended active duty, most of them World War II agents.

The selection of CIC applicants is based on the type of work the Corps performs. Every CIC applicant should, first of all, desire to serve with CIC. He must be a citizen possessing previous military experience and physical qualifications for field service. Fluency in one or more foreign languages is desired. Before assignment, the applicant's character, discretion, integrity and loyalty are established beyond question by a complete background investigation. CIC applicant investigations have high priority, are conducted by experienced CIC agents who know what the Corps is looking for, and are passed upon with a view toward constant improvement of personnel standards.

The minimum requirements for enlisted personnel are a high school diploma and an AGCT score of 110, and for officers, a college degree as well as a high standard for known performance. A recent analysis shows that the current stream of CIC applicants possess an average AGCT of over 123 and that their educational standard is constantly climbing.

Such standards permit maintenance of training in the CIC Specialist School at a high level, consisting of a twelve-week basic investigative course with a curriculum ranging from CIC report writing and English composition to rules of evidence and investigative sound-detection. Upon successful completion of this course and assignment of MOS 9302 (CIC Officer) or MOS 1301 (Counterintelligence Investigator, CIC), personnel destined for shipment overseas are enrolled in an additional eight-week Language and Area Familiarization Course. Here students are given a foundation in an appropriate foreign language or their fluency is refreshed by practice. In addition the politics, economics and history of the area for which they are destined are studied. This phase of training is usually supplemented by an additional orientation course of 4 or 5 weeks conducted by the Theater CIC Detachment in the occupation area upon the new agent's arrival.

An associate 4-week administrative course for the training of CIC administrative clerks (MOS 1405), short investigative-photography and security courses for Military Attaches and other governmental agencies, and a two-week MI-Reserve (CIC Specialization) Refresher Course are also conducted periodically. There is currently contemplated for early establishment in conjunction with CIC career planning, an advanced investigative course to which proven agents can be recalled for training in specialist phases of investigation.

The entire training period is utilized as an opportunity for substantiating the findings of the individual's background investigation by observing his conduct as a soldier and his potentialities as an agent while he is in school. This screening process continues even after field assignment by attaching the new agent as an assistant to an experienced agent for "on the job training." Experience has proved the worth of this constant and lengthy trial cycle by screening out the unfit before they attain a position of individual responsibility. Because counterintelligence is one field where even a small mistake can well have a chain reaction, an agent remains on a quasi-probationary status throughout his entire CIC career.

Each major command determines its need for CIC personnel, and upon Department of the Army approval of a requisition, the required agents are made available from the CIC Center. These men are organized into CIC detachments, each composed of a combination of administrative and operational cells according to T/O &E 30-500. In the case of tactical units, standard combinations of cells are prescribed for division, corps, and army. For larger organizations or areas, detachments are organized by combining an appropriate number and type of cells to provide the personnel required for proper counterintelligence coverage. At present there is a revision of the current T/O&E under way which corrects deficiencies in equipment and manning power demonstrated by the experience of CIC in World War II. It is hoped that this new composition of CIC detachments will enable a security coverage of the Army more commensurate with the increasing importance of counterintelligence.

More typical of CIC operations than those which have been publicized or fictionalized are those routine tasks of a sound security program, such as background investigations or security checks. These are the jobs that make up the everyday workload of the average agent. The routine drudgery of most counterintelligence investigations is typified by a wartime case where 32,000 specimens of typewriting were examined in an effort to trace a flow of subversive propaganda postcards. Such operations make dull reading but are often more productive than Mata Hari hocus-pocus.

The "cloak and dagger" or "gestapo" attitude is not countenanced in the Corps. The emphasis is constantly on CIC operations as a military duty—important but non-glamorous. The prospective agent is made to understand that he is nothing more than a soldier-specialist charged with digging out facts, when directed by the commander to do so.

These principles do not spring from a sense of false modesty but from the realization that the Corps can do its best job with a minimum of sensational publicity. Past experience has demonstrated that the existence or the proper function of the CIC with the Army is not completely known to all. When one stops to consider that the fame—or rather the infamy—of the counterintelligence agencies of the former Axis powers was proportionate to the fear they engendered, this anonymity reflects favorably. While publicity regarding details of operation is not desired, widespread dissemination of information relative to the availability of the CIC to commanders of all echelons and the manner in which its personnel can assist in fulfilling his counterintelligence mission is necessary.

Every officer in the Army must be made and kept constantly cognizant of the importance of security—not only in these tense times but especially when circumstances lead to relaxed vigilance. He must know that the Army provides specialist investigators to assist him in exercising this responsibility. These specialists are the Agents of the Counter Intelligence Corps.

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CARD

FROM THE ARNO to the WINTER LINE

by Lieutenant Colonel Claire S. Curtis[*]

THE Fifth Army's spring offensive had been successful. Rome had fallen, and the troops had battled on to the Arno River, where, in early August, the advance was temporarily halted in order to regroup.

The 760th Tank Battalion during this period had supported the 85th and 88th Infantry Divisions. In the final drive to the Arno River the battalion had supported the 88th Division, and when the division was relieved and returned to a training area in the vicinity of Volterra the 760th remained attached. During the period of this report Company D, 760th, was attached to the NATOUSA RTC at Eboli.

A week was well spent in this training area. Tanks were checked and rechecked; men were given training in indirect fire procedure (because of the number of new replacements received in the previous three months it was found necessary to retrain in this procedure); and tank companies were trained with infantry regiments on river crossing problems.

In mid-August, orders were received from II Corps Headquarters attaching the battalion to the 442d Regimental Combat Team, which at this time was in the line along the south banks of the Arno, just west of Florence. The battalion moved into the combat team zone and remained in support positions for the balance of the month.

A great deal of time was devoted to reconnaissance along the Arno River. Possible fording sites were located, and preparation was made for the crossing that was soon to take place. The river level at this time was very low. It could be forded in many places by ¼-ton trucks.

Final plans were made for the crossing of the Arno. The 760th was to support the 442d RCT in its attack to the north and west of Florence, which had fallen to British forces. A ford near the city limits of Florence was chosen for the tanks. The infantry battalions were to cross the river in their respective zones and join up with the tanks on the north bank.

On September 1st at two o'clock, Company C of the 760th crossed the Arno, with the mission of occupying Petriolo and supporting the infantry in their advance. Upon crossing the ford the tanks were joined by Partisans, who aided the tankers by pointing out enemy mines and assisting in locating a passage over a canal at the outskirts of Florence. Having found a route out of Florence, the tanks pushed forward. Since the company had not met enemy resistance by the time it reached the outskirts of Peretola and had not made contact with the infantry, it was decided to split the company into platoons, sending the 1st Platoon toward Campi Bisenzio, the 2d Platoon to the vicinity of an air field northwest of Florence, and the 3d Platoon to La Sala.

Partisans were very active in this area, and their presence influenced the decision to send these platoons in different directions. It was felt that by so doing, strong points could be established along the most likely routes for enemy counterattack. Thus by 7:15 P.M. the three platoons of Company C, unsupported by infantry, had advanced up the three main roads leading from the west and northwest of Florence to about 5000 yards beyond the city.

From this position, the battalion executive officer radioed back for instructions for the night, since the infantry had not kept pace with the tanks. At 7:55 P.M. orders were received to withdraw the company for the night to the villages of Peretola and Petriolo, where they were joined by the infantry.

For this operation the assault guns of the battalion were formed into a platoon or armored field artillery battery of six guns. For simplicity of control the guns were attached to the 337th Field Artillery Battalion and crossed the river after Company C.

On the morning of September 2nd, the 1st Platoon of Company C, supported by Partisans, moved into the village of Campi Bisenzio and assumed defensive positions. Here the platoon came under heavy artillery shelling which resulted in one soldier killed and others wounded. The Partisans and civilians had a large number of casualties.

The 2d Platoon of Company C moved into the outskirts of Sesto. The town was still occupied by enemy patrols, and the tanks assumed a defensive position. The 3d Platoon of Company C moved through the 1st Platoon at Campi Bisenzio, moved on through the town of Le Corte, and in the afternoon crossed the Bisenzio River on the remains of a bridge that the enemy had blown. The 3rd Platoon took up defensive positions in the town of S. Maria. Infantry patrols accompanied the 2nd and 3rd Platoons and remained as outposts.

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[*] The Armored School, Fort Knox, Kentucky.

During the nights of 2-3 and 3-4 September, the 349th Infantry, 88th Division, relieved the 442d RCT. The tanks remained in place, attached to the 349th Infantry, until the night of September 7th, at which time they were relieved and withdrew to the south bank of the Arno.

On September 7th the 760th was attached to the 88th Division. The battalion assembled in an area just west of Florence. Training of personnel, inspection of equipment, and maintenance of vehicles constituted the battalion program. Officers made daily reconnaissance trips to the front lines to familiarize themselves with the terrain and situation. The 34th, 91st, and 85th Divisions had begun the attack on the Gothic Line, and the mission of the 88th Division and attached units was to be prepared to relieve any of the attacking divisions.

The afternoon of September 18th, Companies A and B moved from the battalion assembly area through Florence and to an assembly area north of the Sieve River. The remainder of the battalion moved into this area on the 20th.

The night of September 19th, Company A was attached to the 349th Infantry and Company B to the 350th Infantry, in preparation for the exploitation of a break in the Gothic Line by II Corps with the 34th, 91st, 85th, and 88th Divisions attacking abreast. The remainder of the battalion remained in division reserve for future exploitation missions. The sector assigned to the 88th Division was generally astride Highway 6524, which was from Firenzuola to Imola.

The morning of September 22nd, the 1st Platoon of Company A, with one platoon of tank destroyers from the 805th Tank Destroyer Battalion attached, moved to a position east of Firenzuola along Highway 6524 to be prepared to support the 349th Infantry Regiment. Highway 6524 wound through a narrow valley bounded on each side by very steep and rough terrain. It had been raining for days, and the few areas large enough for tanks to leave the road were bogs of mud. The tanks were completely road-bound.

The morning of the 23rd the 1st Platoon of Company A moved up Highway 6524 in support of the infantry in the vicinity of Camaggiore. The tanks were able to be of very limited assistance and to do only a small amount of firing in that they had small fields of fire.

On September 23rd, the 2nd Platoon of Company A was ordered to report back to an ordnance unit for installation of a secret rocket-projecting device on each tank. (We later learned that the maximum range of these rockets was 300 yards.) Orders were received on September 28th to remove the devices.

On the morning of September 25th, the 3rd Platoon, Company A, relieved the 1st Platoon. On the afternoon of the 25th, the 3rd Platoon, in close support of elements of the 351st Infantry Regiment, eradicated a number of enemy strong points in the vicinity of Moraduccio. The following day the platoon continued to assist the infantry in its advance and moved to Valsalva.

On the 28th the 1st Platoon joined the 3d Platoon; they then moved to Castel Del Rio and took up defensive positions.

On September 23rd, the battalion (minus Company A) moved across the range of mountains between Scarperia and Firenzuola to an assembly area southeast of Firenzuola. The constant rains made the movement of tanks most difficult; and of course life was, to say the least, grim.

At 6:45 P.M. on September 23rd, an urgent message was received from the Commanding General, 88th Division, directing the battalion to be prepared to send a maximum number of men, dismounted, to garrison Mount Faggiola. The mission of this force was to cover the division's right flank and to patrol to the east, south, and northeast. The British XIII Corps line at this date was several miles to the right rear of the 88th Division's advance elements.

Fifty-six men from Company B, fifty men from Company C, and twenty men from Headquarters and Service Company made up this detachment. Only enough men to maintain the tanks and carry on administrative details remained in the battalion area.

At 11:30 P.M., these men, inadequately equipped as infantrymen because of lack of proper packs, weapons, and entrenching tools, were trucked up Highway 6524 to the vicinity of Mount Faggiola. During the remainder of the night and the next morning these men climbed to the top of Mount Faggiola (1031 meters high) and relieved elements of the 350th Infantry Regiment.

From September 23rd to October 1st, this dismounted force remained in the assigned area carrying out its mission. On September 26th a special force commanded by the executive officer of the 760th was organized. A reinforced company of the 14th Armored Infantry Battalion was added to the original force. Besides the holding of Mount Faggiola, the force had the further mission of occupying the high ground to the north.

The morning of September 28th, the officers and men of Company B on infantry duty were relieved and spent the day climbing down from the high ground. These men reached their company assembly area at 4:45. At 8 P.M., an urgent message was received for these men to reoccupy their positions at once. This was a blow to the morale of the entire company, since no replacements for the men were available and the same men had to return. The constant rain made walking an effort at best, and the men were reaching the point of exhaustion. The return movement began at 10 P.M. and was completed by 10 A.M. on the 29th of September.

The dismounted detachment from Company C was relieved the night of September 30th, and returned to its company area.

By an 88th Division directive issued the 27th, the tanks of Company B had been attached to the 350th Infantry Regiment. Company A had passed to 351st

Infantry control on September 25th as result of a change in boundary lines.

On the afternoon of September 29th, Company C was attached to the 349th Infantry Regiment. Orders were received for one platoon to move out immediately in support of an attack to the northwest of Castel Del Rio.

Due to the absence of the dismounted detachment, no complete platoon was available. It was necessary to form a composite platoon composed of men from Companies B and C to man the Company C tanks. The platoon moved up Highway 6524 toward Castel Del Rio and experienced considerable difficulty due to the conditions of the road. Only four tanks reached Castel Del Rio on the night of September 30th.

At dawn on October 1st, the Company C platoon (the 2nd Platoon) moved along the road leading northwest from Castel Del Rio, firing close support missions for the advancing infantry. Resistance was determined. At 10:30 the lead tank was pierced by an antitank shell. The platoon leader and two crewmen were wounded, one crewman was killed, and the tank was destroyed. The destroyed tank blocked the one-way road for several hours before it could be removed. Effective enemy small-arms fire and antitank fire made removal most difficult.

At 12:30 October 1st, the 1st Platoon of Company C was ordered to be in position by daylight of October 2nd to aid a battalion of the 349th Infantry Regiment in an attack from Belvedere. This necessitated a move from the company assembly area back to Firenzuola to Highway 65 and then up Highway 6529. The 1st Platoon contacted the infantry battalion early in the morning of October 2nd and moved into the attack shortly after first light. This attack, in conjunction with that supported by the 2nd Platoon, cleared the enemy from the area south of the Castel Del Rio—Belvedere Road.

On October 3rd, Company C, in support of the 349th Regiment, attacked toward Sassoleone. At the same time, Company A supported the 351st Infantry in its attack toward Gesso. The advance was slow and costly, for enemy resistance was determined. By 2:10 A.M. on October 4th, Sassoleone had fallen to the 349th Regiment. On 7 and 8 October, the Falchetto hill mass fell to the 349th Regiment. Company B, 760th, supported the 350th Infantry in the attack of Mount Delle Tombe; again stubborn resistance was met. The enemy fought hard to defend every foot. Mount Delle Tombe hill mass was secured by October 10th. The cost in casualties was high. Company B had lost its company commander and three platoon leaders—its complete command echelon.

Gesso fell to the 351st Regiment on October 10th. Company A was able to give a good deal of close support to the infantry, although in some instances terrain limited the use of tanks. Several severe counterattacks were beaten off in this area.

By October 16th, the 349th Infantry, with Company C in support, had reached the high ground south of San Clemente. On October 17th, San Clemente fell, and Company C established a road block east of the town.

From this point, regardless of the constant attempts to advance, the troops were held up successfully by the enemy. Now that our troops were approaching Mount Grande, every movement was under direct observation by the enemy; and under these conditions he took every opportunity to show his strength in both man power and fire power. It became evident that Mount Grande was the key point to the entire enemy defensive line, and the 88th Division was directed to exert every effort to capture Mount Grande and Mount Cerere.

In support of these attacks a veritable "blitz" of air support, beginning October 18, was being planned. On October 19th the attack by the Air Corps took place on Mount Grande, beginning at 11:45 A.M. and lasting until 4:45 P.M., with a mission of bombing and strafing the feature once every fifteen minutes. Following this air blitz, the division artillery, together with a provisional battalion of cannon from the 760th Tank Battalion (minus) massed their fire on the terrain feature, laying down some 8400 rounds between 5 and 6 P.M. Excellent results were obtained, and the morale of the fighting men was boosted tremendously. At 7 A.M. on October 20th, the 349th Infantry reported Mount Grande had been captured, positions were secured, and all-round security was established. At this time all indications pointed to the fact that the offensive would continue into the Po Valley, since the division had not been directed to secure its positions and establish active defense.

It was decided to get tanks to the top of this hill mass to be better able to continue the advance and ward off counterattacks. [In a tour of forward positions General Mark W. Clark appeared at the C.P. of the 350th Infantry Regiment on the night of October 20, 1944, and ordered, "Get tanks on Grande!"—EDITOR.]

At dawn on October 21st, 1944, Company A, less one platoon, (eleven tanks) and a tank recovery vehicle started up the mountain by a very roundabout, previously reconnoitered route. The tanks were led by an engineer bulldozer. The company commander's tank in the lead rolled into a ravine when the newly made trail gave way on the outside edge. A trail subsequently built used this tank as a foundation.

The tanks, oftentimes aided by the bulldozer, proceeded on, and by mid-afternoon reached the crest of a ridge leading east onto Mount Grande. There was a cart trail along the top of this ridge. The infantry was dug in on the reverse or south slope of this ridge, and the cart trail generally marked the line of outposts. The tanks had to proceed along this trail.

A heavy rain commenced just as the tanks reached the ridge crest. The lead tank slipped off the trail and became firmly stuck in the mud. Attempts to pull it out with other tanks were unsuccessful. The tank recovery vehicle had stopped to retrieve the company commander's tank and was caught by the rain which soon made forward movement by this vehicle impossible.

Two more tanks were stuck in by-passing the one west of Farneto.

It was now night, and to complicate matters, the rain had given way to a heavy fog. Visibility was zero. The lead tank of the column ran off the road at Farneto and rolled to its right side. An inspection of the trail ahead, made on hands and knees, indicated that it had become too narrow for a tank to negotiate even in the daylight. Another by-pass was attempted and four more tanks were stuck; two got through.

These two tanks successfully reached a point near the crest of Mount Grande and backed a short distance up a narrow trail leading to the top. Visibility improved at dawn, and the platoon leader with the two tanks attempted to move fifty yards to a more concealed position. The lead tank threw a track, hopelessly trapping the second tank behind. Of the eleven tanks, none now remained mobile.

With dawn came more rain. Seven of the tanks stuck along the Farneto ridge trail were recovered with the help of the engineer bulldozer, whose crew had little liking for work in such a location. One tank again became mired in the mud and could not be retrieved. The remaining six were assembled in the only available concealed place on the side of the mountain.

Two of these tanks assisted in the capture of Monte Calderaro by firing from the road. They remained in position just north of Casa la Costa.

The attack on Mount Vedriano began next. Two tanks got as far as Casa Cola but, after one entire infantry company was lost, a withdrawal was ordered to Casa il Vezzola. One tank slipped off the road, becoming hopelessly stuck, and was destroyed to prevent capture. There was room for only two tanks at Casa il Vezzola, so the remaining three were sent back to Casa la Costa. The trail caved in under the last tank out, and the two tanks in Casa il Vezzola had no means of withdrawal. Four tanks were now operative, two sealed off at Casa il Vezzola and two at Casa la Costa.

Two nights later at 6:30 an enemy battalion attacked Casa il Vezzola but was repulsed by a company of infantry supported by the two tanks there. The enemy battalion commander was killed by the tank commander as he was trying to get onto the tank. Rocket antitank weapons were fired at the tanks from a building twenty feet away, but none scored hits. The effective fire support from the two medium tanks greatly aided in the repulsion of this attack.

Several limited objective attacks were launched, but to no avail. Enemy resistance was fanatical, and the condition of our own troops after such a steady, long push made further advance impossible. Rains had washed out all roads and made supply most difficult. The end of the month saw our troops in defensive positions. The 760th Tank Battalion historian stated that "No great gains were made, and the capture of Bologna remains imminent and is likely to remain so for quite some time."

During the first seven days of November, positions remained unchanged. During several short periods of time it was impossible to supply units. The road that Company A had used to reach the crest of Mount Grande had long since become impassable. It was necessary to supply these tanks by mule train—a most difficult procedure due to weather and enemy activity. Gasoline, rations, water, and ammunition for seven tanks and their crews called for a nightly mule train. It became apparent that with the weather continuing as it was and the infantry as depleted in ranks as they were, relief must be made.

Elements of the 91st Infantry Division and of British divisions replaced the 88th Infantry Division by making nighttime relief, when possible. The water-soaked terrain, continuous aggressive enemy action, and the position of the tanks made it impossible, both physically and tactically, to remove the tanks of Company A that were forward of Mount Grande. Because of the impossibility of removing these tanks, arrangements were made with the 11th Canadian Armored Regiment to take them over in position. Company C also had four tanks forward of S. Clemente, forming a road block; and it was deemed inadvisable to remove them. They were, therefore, also turned over in position to the 11th Canadian Armored Regiment.

By November 9th the entire battalion was out of the line.

At no time during the period covered by this report did the 760th operate as a battalion. The nature of the missions given and the type of terrain precluded any such use. It was usual for a company to be attached to an infantry regiment. Seldom was more than a platoon at a time able to assist in an attack—this due to the terrain and weather, which made cross-country movement impossible.

It was customary to assign a liaison officer to each regiment to facilitate control of the attached tank company by the regimental commander. Usually, in addition to these liaison officers, the tank battalion executive officer and S-3 were constantly at the command posts of the two active regiments and actually became unofficial staff officers on the regimental staffs. This system worked out quite well, for the regimental commander then had an experienced tank officer at his right hand to aid him in decisions requiring the employment of armor.

The old problem of coordination between tank and infantry units of company size reoccurred during this period of combat in the Italian Campaign. The new organization of the infantry regiment with its integral tank company should eliminate many difficulties of this nature. For close support work, tank crews and infantry units should train together and remain together; for only by so doing can the maximum in efficiency be obtained.

CARDED

Moselle River Crossing At Cattenom

by Major Charles E. Wright

PLANS were initiated on October 15, 1944, for the reduction by the XX Corps of the entire fortified region of Metz. The Corps plan, when perfected at the end of October, contemplated two distinct operations to be performed concurrently: first, an attack to encircle and destroy the garrison of Metz; second, the seizure of a bridgehead over the Saar River in the vicinity of Saarburg as a base to resume the attack to the northwest.

Reason for the Corps plan was: After the Metz operation had commenced and the enemy strength had been sucked into the threatened area, an infantry division, crossing north of Thionville, could proceed rapidly over the base of the Saar-Moselle triangle and seize a bridgehead over the Saar River at Saarburg. The execution of this second operation was timed to coincide with the encirclement of Metz.

The Metz operational plan directed the 5th Infantry Division to attack on the south from the Arnaville bridgehead and seize the high ground southeast of Boulay. This attack was to be coordinated with the XII Corps attack on the right.

The 90th Infantry Division was directed to make the assault crossing over the Moselle River on the north, execute a flanking attack along the trace of the Maginot line and join up with the 5th Infantry Division east of Metz in the vicinity of Boulay. This route had the advantage of commanding ground along the ridge line and the elimination of the Maginot forts with danger of crossfire if by-passed. General Walker, Corps Commander, after making a personal reconnaissance of the northern portion of XX Corps Zone, selected the area between Malling and Cattenom for the 90th Infantry crossing site. This division would first reduce Fort Koenigsmacher, and then establish a bridgehead over the Moselle in this area.

The 10th Armored Division, on order from XX Corps, would be passed through the Koenigsmacher bridgehead and attack southeast to Boulay, at the rear of the Metz fortified region, on the outside of the 90th Infantry Division. Fort Koenigsmacher was to be reduced before the armor was passed through the bridgehead. The mission of 10th Armored Division was to disrupt communications, destroy reinforcements, and aid in blocking enemy escape routes from Metz.

It was believed, from the available intelligence, that the river line opposite Thionville was heavily defended by the enemy. Farther south at Uckange was an excellent crossing site. This was the logical place for a crossing, and it was thought that the enemy would be set for an attack in this area. With these considerations in mind, General Walker ordered an infantry battalion of the 95th Infantry Division to make a demonstration in force at Uckange in order to distract the enemy's attention from the main effort by the 90th Infantry Division at Koenigsmacher.

The remainder of the 95th Infantry Division was to be disposed to contain the fortified salient west of Metz. Then, on order of General Walker, the 95th Infantry Division was to advance and capture the city of Metz.

This plan was submitted to Third Army for approval on October 28. It was General Patton's belief that an armored combat command could make a surprise attack to the Saar River in the vicinity of Merzig and seize bridges intact there while the enemy's attention was concentrated on the defense of Metz. If this effort should fail, then the effort was to be diverted farther south to Saarlautern or Pachten. Combat Command B of 10th Armored Division was chosen to execute this part of the plan.

Prior to the river crossing, the 3d Cavalry Group was to screen the Moselle River line north of Thionville and cover readjustment of the troops. This mission involved the clearing of the west bank of the river of the enemy. Later plans called for the 3d Cavalry Group (reinforced) to pass through the bridgehead on Corps order and seize Saarburg.

D-day was set for November 9, 1944. The intervening two-week period was to be used in training troops for the forthcoming operation and regrouping of units.

The Koenigsmacher Bridgehead

The XX Corps Engineer planned the engineer support of the 90th Infantry Division. Engineer attachments from XX Corps were to join and train with the assault regiments in their training areas. The 1139th Engineer (C) Group was assigned direct support of the river crossings and assault operations of the 90th Infantry Division.

The 90th Infantry Division plan called for an assault crossing by two infantry regiments abreast. The 358th, on the right, was to cross in the vicinity of Cattenom. The 359th, on the left, was to cross in the vicinity of Malling. The 357th in reserve was to cross on Division order in the vicinity of Cattenom. The divisional engineers were disposed with their normal team attachments. They were to cross with the infantry with the mission of reducing obstacles and removing mines on the far shore to assist the advance of the infantry.

The commanding officer, 1139th Engineer (C) Group, assigned the crossing at Cattenom to the 179th Engineer (C) Battalion. Their mission was to cross the infantry in assault boats, to ferry supplies and evacuate wounded, and to construct an M-1 treadway bridge at the Cattenom site.

The commanding officer, 179th Engineer (C) Battalion, assigned Company C to man the assault boats and ferry supplies for the 358th Infantry Regiment. A Company was assigned the same task with the 358th Infantry Regiment. C Company was also to place a cable across the river above the bridge site for a boom to protect the bridge. Company B was assigned the task of building the bridge. Companies A and C were to establish liaison with the infantry and move to the infantry assembly areas for coordinated training in river crossing tactics and technique. A platoon of the 993d Treadway Bridge Company, one platoon of 509th Light Ponton Bridge Company, and one chemical smoke generating company were attached to the 179th Engineer (C) Battalion.

Preparations Prior To Crossing

The troops to make the crossing were assembled or alerted. A wooded area about 10 miles west of the crossing site was selected for the engineer troops. The road net was restricted; consequently, troops were moved in accordance with a traffic schedule drawn up by Corps. At 6 P.M. on November 4, the 179th Engineer (C) Battalion received orders from Corps to move before midnight to the vicinity of Angevilliers. The battalion departed Valleroy about 11 P.M. and moved the distance of approximately 25 miles, arriving at the new assembly area well before daylight. They set up a bivouac area in the rain and darkness. During the next three days, preparations were made for the crossing operations.

Map study and ground reconnaissance were carried out as early and as thoroughly as possible. From Thionville northeast to the German border, the Moselle River traverses a broad river plain, with river banks varying from moderately abrupt to gently sloping. West of the Moselle, opposite the trace of the Maginot line, the Forest of Cattenom provided an assembly area for the initial river crossing, although it had a tactical disadvantage in being located on the forward slope of the valley hills. Between the forest and the river, for about two and one-half miles, the ground was devoid of cover and completely under observation from the enemy-held high ground across the river. The entry into and assault from the woods was to occur under cover of darkness.

Across the river to the east of the Cattenom assembly area, stood Fort Koenigsmacher. To the left was the head of the ridge which contained the line of the Maginot forts. These two heights commanded the entire crossing area and provided the enemy with excellent observation. The tactical effect of the entire terrain favored the enemy. It would force the infantry and armor of XX Corps to canalize the attack between ridge lines of a hilly and heavily wooded terrain.

Reconnaissance was made as close to the river as possible. Small unit leaders and staff officers observed from the cavalry outposts and high ground west of the river during daylight. Night patrols reconnoitered the approaches and the river bank.

The 359th Infantry was to be crossed at Gavisse by the 135th Engineer (C) Battalion. The 358th was to cross opposite Huzange and capture Fort Koenigsmacher and Basse-Ham. The 357th was to cross opposite Cattenom either by assault boat or ferry after the 358th had taken the initial objective. The engineer teams joined and practiced with the infantry during this period November 4-7.

Engineer attachments to the 179th (C) Battalion joined and coordination was perfected. Reconnaissance of the initial assembly area in the Cattenom Forest was made and areas assigned to each unit. Fortunately, a few surfaced roads were found in the forest. These were assigned to the heaviest engineer equipment in case the vehicles could not use the forest trails because of the rain. Units were located so that each unit had a clear route to the river and could move out without interference from other units and without unnecessary delay.

Supplies were built up. Dumps were placed farther forward than normal to facilitate more rapid resupply later. The engineer boats, ferry, and bridging equipment were located in the Angevillier area. Communications were planned to include wire from the supply dumps to the initial assembly area, to the forward command post at Cattenom and down to the river at the bridge site.

Artillery displaced forward by bounds during this period. Guns were dug in and one gun per battery was registered. There was a total of 20 artillery battalions supporting the crossing and bridgehead.

For several days prior to the crossing, the 3d Cavalry conducted intensive patrolling of the river line to deny the enemy knowledge of the impending operations. The actions and attitude of the civilians in Cattenom were troublesome to the cavalry; consequently, the civilians were evacuated during the night November 2-3. Later, captured PW's and a captured document substantiated evidence that the Germans were not aware of the coming attack in this area.

The engineer units moved into Cattenom forest in the night November 7-8, in the rain. The infantry moved the same night and occupied areas in the forward edge of the forest. The next day was spent in perfecting arrangements of last minute details and in preparation of the engineer equipment for the task ahead. All units made last minute checks of equipment. Everything was ready for the crossing which was set for 3 A.M. on November 9.

THE CROSSING

Under cover of darkness, the engineers marched down to the previously selected final assembly areas accompanied by the boats on trucks. The boats were unloaded under cover of fire from assault guns from 3d Cavalry. The infantry marched down to the final assembly areas and were met by the engineers with the boats unloaded and lined up in readiness for the approach to the river.

The 358th Infantry had planned to cross the First Battalion in advance in four waves of eight boats each. Each boat carried 12 infantrymen and three engineers as crew. The trucks could get no closer to the river than the edge of Huzange. This necessitated a carry of 1500 yards.

As the engineers and infantry approached the river, the infantry realized that this carry was too long. The men became tired and the noise may have attracted the attention of the enemy. Sixteen boats were taken so that the second wave could follow closely behind the first wave.

When the river had been reconnoitered during the preparatory stage, the width at Huzange was 118 feet. Now, as a result of continuing rains for several days, the river had risen steadily, and the current was about five miles per hour and steadily increasing. The river width was 300 to 600 feet.

The first wave put its boats in the water at 3:30 A.M., November 9, and the crossing began. No resistance was encountered. The second wave followed. The rising water had flooded the enemy rifle pits and covered the mines along the far shore. However, the current was so swift the engineers returning to the near shore were swept downstream about 1000 yards. To add to the difficulties, the enemy began dropping artillery and mortar shells on the near shore among the infantry waiting to cross and the engineers struggling with the boats. The engineers, not finding the infantry waiting on the near shore, started back to Huzange but became confused and ended up at Cattenom. In the meantime, the infantry, after waiting for the engineers at Huzange, proceeded to the river, found the boats and crossed, leaving the boats at the far shore. More boats were sent to the river and as the crossing proceeded and the stream became wider and swifter, more boats were lost. The boats from the ferry sets were finally thrown in to get the reserve regiment across during the next day. By noon the river was 800 yards wide. Ferrying operations were started by Company A as soon as possible, but many motors were disabled by the submerged wire fences. There was insufficient equipment to take all the troops and supplies, because of the hazardous and difficult operating conditions.

Ferrying operations were continuous 24 hours daily until the bridge was opened. Equipment used included paddled assault boats, double powered assault boats, 55 h.p. storm boats, power utility boats, and DUKWs. A light ferry was tried but was unsuccessful due to hazardous operating conditions. Lanes were cut through the barbed-wire fences for the boats and were marked by floating oil drums for daytime operation and luminous markers for night operation. The rain continued and the river rose unchecked. The inundated area was one and one-half miles wide on November 10, with water standing in the streets on the edge of Cattenom.

At the end of the first day, eight battalions of infantry were across but they had only hand weapons. In the reduction of Fort Koenigsmacher large quantities of explosives were needed and liaison planes carried critical supplies and made air drops to the infantry. The bridgehead was secure for a depth of two miles. Guns and armor were needed to stop the counterattacks which the enemy was preparing to throw at the bridgehead. The answer was a bridge.

A periodic check was made of the river height. At 6 P.M., November 11, the water reached its crest and commenced to subside. Company B had been impatiently waiting to get at the bridge job. As soon as the road to the river was fordable operations were started. The smoke generator company screened the bridge site with smoke during daylight.

Initially the floats or pontons were inflated in the Forest of Cattenom. Later, as the enemy fire was removed, the inflation site was moved forward to the town of Cattenom. The method of transporting the floats to the river was improvised. A strong board was laid across the top of the 2½-ton truck at the front end of the body. This supported the forward end of the float and the rear rested in the truck bed. They were placed and unloaded by mobile speedway cranes. The advantages of this method over the inflation at the river are many. The floats are not in the danger area until ready to be placed in the water. The air compressor with its noise is kept back. More space for working can be made available for inflation. Bridge construction time will be shortened. The only disadvantage is that a crane should be at the river to take these inflated floats from the trucks and place them in the water. This valuable piece of equipment makes a good target for enemy fire and is not easily replaced.

Company B started the bridge late in the afternoon of November 12. The bridge was constructed from the far shore to the near shore as the working site on the near shore was limited to an old ferry landing. As ponton sections were completed they were pushed by a power utility boat into place successively from the far to the near shore. A ponton section in this case was two floats with saddles and steel treads assembled and joined. The greatest difficulty occurred in joining sections to the completed portion of the bridge, especially in the center of the stream, where the current reached approximately eight miles per hour.

The cables were put in upstream after considerable difficulty with anchors on the banks. As the water receded, mines and tactical wire were uncovered on the far shore, making it necessary to remove them. One of the DUKWs used in ferrying hit one of the mines after the water receded. Five hours were spent in removing mines in the vicinity of the bridge.

Engineer resupply was one of the most important problems on this operation. The plans were based on a narrow stream crossing. Assault boats were on the critical list in the Theater and were strictly allocated for over-all planning. Consequently, when the reserves were used, no more were available.

Resupply for ferrying operations was difficult due to the high rate of breakdowns. Equipment was repaired and replaced as fast as possible. Shortages of critical items continued to exist, however, due to unforeseen and uncontrollable circumstances. (This statement is made from experiences at battalion level.)

The bridge platoon carried 432 feet of bridging as basic load. Some floats were damaged in handling and many were punctured badly by enemy fire. The resupply point was at Angevilliers, about 10 miles to the rear. As soon as one or more of the bridge trucks were emptied, they were sent to the rear to reload. At times it was necessary to load extra floats on 2½-ton trucks and send them to the inflation site. Other supplies and tools were checked carefully and often to prevent a shortage at a critical stage in the construction.

The Cattenom bridge was completed at 7:15 P.M., on the 13th, in approximately 24 hours. The length of the bridge was 630 feet. The infantry was now beyond range of its supporting artillery and forward movement was contingent upon displacement forward of the artillery. The vehicles of the Division began pouring across the bridge at 7:40 P.M. By next morning, all regimental transportation of the three infantry regiments plus the light artillery and the two tank destroyer battalions had cleared the bridge. The bridgehead was now established.

Another floating treadway was constructed at Malling downstream and a fixed Bailey at Thionville. The 10th Armored Division crossed these two bridges on the 15th and broke out of the bridgehead on the morning of the 16th to accomplish its mission. The encirclement of Metz was completed on November 19, by elements of the 90th Infantry Division from the north and the 5th Infantry Division from the south.

CONCLUSIONS

Planning for a river crossing requires careful consideration of reserves of engineer equipment. Plans should take into consideration the technical requirements of engineer operations and the limitations of engineer equipment. Coordination between infantry and engineers must be carefully worked out in advance. Engineers in support or attached should maintain liaison constantly and be promptly informed of changes in plans. During the actual crossing, an engineer officer should be in charge of all engineer equipment and technical operations.

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CARDED

Roer River Crossing At Linnich, Germany

by Lieutenant Colonel Charles R. Keasey

THE Roer River rose to historical prominence in the winter of 1944-1945 when it became an integral part of the German western border defenses. It effectively closed the 25-mile gap in the Siegfried Line which the American advance through Aachen had made. "For the Ninth U.S. Army, a further invasion of Germany to reach the Rhine depended upon the forcing of the Roer River."[1]

Roughly, the Roer River runs parallel to the German frontier from Roermond in the north, where it joins the Maas to Duren in the south. It also parallels the Rhine about 25 miles further east and is an effective barrier to any attack from the west aimed at the Ruhr industrial area. The advance to the river had been a slow fight against determined resistance and the enemy was quick to respond to any probing of the east bank. The situation called for the build-up of a powerful attacking force before a crossing could be forced.

Detailed plans for the Roer crossing were formulated early in December after elements of the XIX Corps and the XIII Corps in the Ninth U.S. Army zone reached the river at Jülich and Linnich. However, the operation was delayed for more than a month by the German counteroffensive in the Ardennes. A further delay was caused when the enemy blew the gate valves of the Schwammanuel Dam south of Duren as they retreated before the First U.S. Army which took the dam on February 9.

As a result, the Roer River north of Duren rose to a flood height of 10 to 12 feet and to a width of 200 to 260 feet in the channelized portions and 1000 to 3000 feet where the river overflowed its banks. The current in the channelized portions of the river also increased in swiftness to five to nine feet per second. Heavy thaws which started late in January added to the flood conditions which remained throughout most of February.

As a result of these delays the planning, preparation and training phases of the crossing were continued. As the river itself now became the main obstacle to the crossing an engineer combat group was assigned to support each assault division. Each engineer combat group was to consist of three engineer combat battalions and supporting engineer bridge companies. River crossing schools were set up along the Maas River and Infantry-Engineer teams rehearsed assault crossing while supporting engineers increased their technical proficiency in bridge construction in swift water.

On the Ninth U.S. Army front the XIX Corps was to cross on the right with its main effort at Jülich, the XIII Corps in the center with its main effort at Linnich, and the XVI Corps on the left to cross at Hilforth and Linnich after the XIII Corps had created a bridgehead for it. The Second British Army was to the left of the Ninth U.S. Army and the First U.S. Army was to the right of it.

The XIII Corps planned to cross with two infantry divisions abreast, the 84th Infantry Division on the left and the 102d Infantry Division on the right with the 5th Armored Division in reserve. Both divisions were to make their main effort at Linnich as the river above and below the town had flooded the lowlands to some 1500 to 3000 feet in width while in the channelized section in and near Linnich the width varied from 200 to 250 feet.

The 84th Infantry Division planned to cross on a one-battalion front in two waves of two companies each. Local conditions along the river dictated such a plan. The divisional engineers, the 309th Engineer Combat Battalion, were assigned the responsibility of the assault boat crossing.

The 1149th Engineer Combat Group was placed in general support of the 84th Infantry Division and the 171st Engineer Combat Battalion was placed in direct support of the division with responsibility for the assault bridges.

Plans, as finally developed in conferences between the 84th Infantry Division, the 1149th Engineer Combat Group, the 171st Engineer Combat Battalion and the XIII Corps Engineer, called for six bridges to be constructed in the division zone.

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[1] Lt. Gen. W. H. Simpson, "Rehearsal for the Rhine," *Military Review* (October 1945), p. 20.

Three infantry footbridges were to be placed in operation, construction to be started as soon as the infantry assault wave reached the far shore and the bridges completed by H-plus-45 minutes in time for the second battalion of infantry to cross. An Infantry Support Bridge and an M-2 Treadway Bridge was to be started as soon as small arms and automatic weapons fire was eliminated from the sites. The estimated completion time was H-plus-5 hours for the Infantry Support Bridge and H-plus-7½ hours for the M-2 Treadway Bridge provided the sites were clear at H-plus-1 hour. The second M-2 Treadway bridge was to be constructed on a site approximately 2000 yards downstream after the infantry had cleared a bridgehead. The bridging equipment for the crossing included 100 M-2 assault boats, 432 feet of footbridge, 400 feet of infantry support bridge, 532 feet of M-2 Treadway bridge and 6 LVT's.

After final approval of these plans the 74th Light Ponton Company and the 989th Treadway Bridge Company were assigned to the 171st Engineer Combat Battalion by the 1149th Engineer Combat Group for the operation.

Intensive training and preparations were immediately started so that the line companies of the 171st Engineers and the attached units could perfect the details of the actual crossing. Company A volunteered for and was given the task of constructing the three Infantry Footbridges and the Infantry Support Bridge. Company B was assigned the task of constructing the M-2 Treadway Bridge at Linnich. Company C was responsible for constructing the M-2 Treadway Bridge at the Korrenzig site downstream from Linnich. One platoon of Company C was assigned the task of constructing approximately 100 yards of plank tread approach road for the Infantry Support Bridge.

Reconnaissance of the river line during this period was continuous. The Battalion Commander, S-3, and Company Commanders of the line companies and attached companies spent hours daily studying aerial photographs, the river, the current, eddies, near and far shore and approaches, and the enemy. Scale sketches were made of the area with detailed sketches of the proposed crossing sites. Final plans and orders were prepared, equipment inspected, training perfected, and reserve equipment secured and stockpiled. Only the flood condition of the river delayed the crossing.

"On February 21, the Army Engineer advised that, though the river would still be swollen, we would be able to negotiate it on February 23. Acting on this prospectus, I (Lt. Gen. William H. Simpson, C.G., Ninth U.S. Army) issued orders for the attack on the morning of February 23, preceded by a 45-minute artillery barrage."[2]

In a sense, the operation, to be known as "Operation Grenade," started with feints on the two nights before the actual crossing. On the night of February 20-21 an artillery concentration was fired from 2 to 2:05 a.m. and a two-hour smoke screen was maintained along the far shore. On the following night, February 21-22, the concentration was repeated but the time was changed to 5 a.m. and the place was changed to farther upstream and the smoke screen was maintained most of the night to allow the engineers to work near the river bank.

On the night of February 21-22, under cover of the smoke screen, the 309th Engineers were able to move the assault boats to covered positions within 1000 yards of the river and the 171st Engineers were able to place the footbridge equipment in covered positions within 1500 yards of the crossing sites.

On the night of 22-23 under cover of the smoke screen the 309th Engineers cleared the routes to the river and marked them with tracing tape. Six lanes were laid out from the final assembly area to the boat group area and 35 lanes were laid out from the boat group area to the water's edge.

It was D-Day, February 23; at 1 a.m. the 309th Engineers began to carry the assault boats to the boat assembly areas. The 171st Engineers carried the footbridge to positions directly in front of the bridge sites and carried the plank for the plank tread approach road to the proper sites. By 2:30 a.m. everything was in position.

At 2:45 a.m. Division, Corps, Army Artillery and all supporting weapons opened up with their 45-minute preparation.

"At exactly 3:30 a.m.—H-Hour—the artillery barrage was shifted back a few hundred yards. The engineers rushed forward to the footbridge sites with their equipment. The first wave of 35 boats, carrying Companies A and C, 1st Battalion, 334th Infantry, hit the water. . . . The two companies crossed on a front of approximately 700 yards. The boat trip took about ten minutes. The second wave of boats, bearing Companies B and D, hit the water at 3:45 a.m. By 4:05 a.m., the entire 1st Battalion was safely across. The casualties were negligible."[3]

At the footbridge sites elements of Company A, 171st Engineers had crossed in assault boats with the first wave of infantry and had attached the anchor cables and float cables to ample holdfasts. All three bridges were partially constructed before the enemy reacted to the attack with heavy mortar and artillery fire. Construction continued in spite of numerous casualties.

Footbridge No. 1, on the right was almost completed when enemy automatic weapons fire broke out from a stretch of shore that had not been cleared by the infantry, causing severe casualties and forcing the engineers from the site.

Footbridge No. 2 was completed by 4:10 a.m. but it was immediately knocked out by assault boats that drifted downstream from another crossing site.

Footbridge No. 3 was completed at approximately the same time but it was knocked out by a direct hit from enemy artillery before the infantry could use it.

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[2] Lt. Gen. W. H. Simpson, "Rehearsal for the Rhine," *Military Review* (October 1945), p. 24.

[3] Lt. Theodore Draper, *The 84th Infantry Division in the Battle of Germany,* The Viking Press, 1946, pp. 144-145.

Spare equipment and equipment salvaged from the other bridges was brought up to the site of footbridge No. 2 and one instead of three footbridges was placed in operation. However, this footbridge was not completed in time for the second crossing battalion, the 3d Battalion, 334th Infantry to use. The third crossing battalion, the 2d Battalion, 334th Infantry, was therefore, the first to use the footbridge when it crossed at 11:30 a.m.

The same enemy automatic weapons fire that caused abandonment of Footbridge No. 1, also caused considerable delay in starting construction of the infantry support bridge. Engineers from Company A, 171st Engineers suffered a number of casualties on the site before elements of the 3d Battalion, 334th Infantry had cleared out the enemy pocket that had been by-passed by the 1st Battalion. However, by 9 a.m., Company A, less the platoon that was still working on the footbridge at site No. 2, restarted work on the Infantry support bridge, and with the assistance of the platoon of Company C who had completed the plank-tread approach road to the site, completed the bridge and had traffic rolling over it by 5 p.m. despite damage done to the bridge during construction by increasingly heavy mortar, rocket, and artillery fire.

Enemy resistance from a demolished factory and a partially demolished concrete pillbox directly opposite the Treadway Bridge site kept Company B off the site until Noon when an assault team from the 2d Battalion, 334th Infantry, effectively cleaned out the enemy pocket. Construction started at once and at 7 p.m., just as the bridge was being completed, "enemy jet planes came over, dropped flares, circled and made a bombing run on the bridge, and then circled back on a strafing attack, causing extensive damage to both the Treadway Bridge and the Infantry Support Bridge."[4]

As a result of this enemy action, no tanks or tank destroyers were able to cross the river D-Day, leaving the infantry completely without armor support. However, during the two-hour period that the Infantry Support Bridge had been opened, ammunition trains and some towed 57mm antitank guns had crossed to the Infantry.

The tactical situation was such that Company C, with its Treadway equipment, had to be called from the Korrenzig bridge site and its equipment used to replace the Treadway Bridge that had just been destroyed. Company C was assigned the task of replacing the Treadway Bridge, Company B took over the task of repairing the Infantry Support Bridge, and Company A, which had suffered heavy casualties, was ordered back to reorganize.

At 5 a.m., D-Day-plus 1, February 24, enemy aircraft and artillery again damaged the Treadway Bridge and destroyed the Infantry Support Bridge. Company C repaired the Treadway Bridge and Companies A and B combined with what effectives they had left and rebuilt the Infantry Support Bridge.

By 11:30 a.m. the Treadway Bridge was repaired and the first tanks, the tanks of Company A, 771st Tank Battalion, crossed the Roer River. By 2 p.m. the Infantry Support Bridge was again opened to traffic.

After 42 hours of constant effort on the part of the Engineers, the bridges were in and in to stay, the infantry was getting the reinforcements it needed and had the bridgehead well under control. Antiaircraft units kept the enemy air away from the bridges and the infantry had driven the enemy beyond the range of his light and medium artillery.

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[4] After Action Report, 171st Engineer Combat Battalion, February, 1945.

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Amphibious Tank Employment In Assault River Crossings

by Major Floyd R. Waltz, Jr.

PRIOR to World War II our fighting tanks were designed only for operation on the ground. During World War II, amphibian fighting tanks were developed as a means to facilitate seaborne invasions of hostile shores. There was a large number of amphibious tanks concentrated in France after the Normandy and Southern France invasions, and probably as a result of this concentration, these tanks were used in the assault phases of the Rhine River crossing in March 1945. Generally, the quality of performance executed by units employing amphibious tanks in the Rhine crossing, varied directly with the degree of planning and previous training with amphibious equipment.

The current trend in tactical doctrine for amphibious tanks is to emphasize their application in seaborne operations over that in assault river crossings. This trend may be explained by the relatively subordinate role of amphibious tanks in river crossings as compared to their spectacular role in Normandy, Southern France, Okinawa, and numerous other Pacific landings. They were employed in only one major river crossing, the Rhine River, and resistance was unexpectedly light. A second factor which may appear to reduce their value or necessity in river crossings is the ease with which bridgeheads were established over the Rhine River. The next war may find our armies faced with the necessity for establishing bridgeheads across major rivers against determined opposition.

Principles of River Crossings

To briefly summarize the basic principles involved in a river crossing, it should be emphasized that the actual crossing is a means, not the end sought. The immediate purpose is to get across quickly and establish a bridgehead which will protect the crossing of the remainder of the command. In establishing a bridgehead for a large force there are usually three successive objectives on the enemy side of the river: (1) a position which will eliminate effective, direct, small-arms fire from the crossing front; (2) a position which will eliminate ground-observed artillery fire from the selected ponton bridge site(s) and which can be supported by light artillery on the attacker's side of the river; and (3) a position which will provide the necessary maneuver space on the enemy side of the river for the command.

If no permanent bridges are available, standard fighting tanks can not move to the enemy side of the river until ponton bridges are constructed or ferries are put into operation—usually after the infantry has taken its first objective. The normal employment for tanks is to support the infantry assault crossing by direct fire from the friendly bank of the river until crossing means become available. Upon reaching the enemy side of the river, liaison is established with the infantry and the tanks resume their normal role. Depending upon the tactical situation, it is expected that the tanks ordinarily are landed in time to assist in the achievement of the second objective. The primary missions of the tanks are (1) to facilitate the rapid expansion of the bridgehead in the attainment of successive objectives through close and continuous support of the infantry, (2) to provide antitank defense for the bridgehead and (3) to provide a strong counterattack force.

The specific advantage for employing amphibious tanks on an assault river crossing is that they can cross with the leading waves of infantry and can render close and continuous support during the most critical phase of the operation—the attainment of the first objective.

Types of Amphibious Tanks

Discussion of certain present and proposed types of amphibious tanks or conversion kits to make standard land tanks amphibious, is prohibited for security reasons. Therefore the following paragraphs will be confined to describing the types used in World War II.

The Landing Vehicle Track (Armored) Model 5, commonly referred to as the LVT (A) 5, is the present standard model. The forerunner of this tank was the Roebling swamp tractor which was originally designed for hurricane rescue work in Florida. The LVT (A) 5 and its earlier model, the LVT (A) 4, are similar in all respects except that the LVT (A) 5 has incorporated a power traverse and a gyrostabilizer for the main armament. The tank hull resembles an inverted trapezoid with a tank turret mounted slightly in rear of the longitudinal center. The tracks transmit the driving power on both land and water. The water traction is developed through special hydraulic grousers, which are an integral part of the track. The armor plate is one inch thick on the turret, one-half inch on the front plate and over the driver's compartment, and one-quarter inch on the sides and back. A standard modification kit allows for the addition of one-half inch on the front, driver's compartment, and sides. The LVT (A) 5 mounts the M-8 Motor Carriage turret with the 75mm pack howitzer as its main armament. In addition, it carries a bow machine gun and two pedestal-mounted machine guns on top of the turret. Its maximum speed is 10 to 15 miles per hour on land, and six to seven miles per hour in water. The cruising range on land is about 200 miles as compared to 60 miles in water. The tank presents a very low silhouette in water; the only portions above the surface are the turret and that portion of the hull above the top of the tracks. The crew consists of six men. In addition to the crew, there is space inside for 12 combat-equipped infantrymen or one ton of cargo.

The advantages of this tank are that (1) it has extremely good flotation ability, (2) it has a low silhouette in water and presents a poor target, (3) sand or mud bars do not constitute an obstacle, (4) launching and landing points do not need as careful selection or preparation as compared with other amphibious tanks, (5) it can easily negotiate swampy or muddy terrain on either river bank, and (6) no time needs to be spared on the hostile shore to convert it to a land tank.

The disadvantages of this tank are that (1) its armor is relatively thin and will do little more than deflect small-arms fire and some shell fragments, (2) the armament is too light to destroy enemy tanks of any merit, (3) it is slow to respond to control in water, (4) the maintenance rate is very high, especially on tracks and steering bands, and (5) the use of any number of the tanks on roads will destroy the roads almost beyond further use.

The development of conversion kits to make standard land fighting tanks amphibious, resulted in two different types: the Duplex Drive or DD tank was employed in the European and Mediterranean Theaters; and the BB Device, named for its co-inventors, Majors Berg and Blankenship, Ordnance Department, U.S.A., was used in the Pacific Theater.

The BB Device incorporates a system whereby special pontoons support the tank in the water, and propulsion is accomplished by the friction of the tracks in the water. The tank is suspended in the water so that only the turret and a few inches of armor below the turret ring are exposed above the surface. Although standard waterproofing conversion kits must be used with this device, it is possible, though perhaps not always practical, to traverse the turret within the limits of the engine shrouds and to fire the piece. The pontoons increase the width by a few feet but the length is increased to approximately three times the length of the original tank. The front and rear sets of pontoons must be jettisoned by means of a quick release mechanism at the time the tracks are on firm bottom and before the buoyant force on the pontoons is gone. The physical characteristics and performance of the tank on land after the front and rear pontoons are jettisoned is the same as any other standard type tank except that maneuverability through woods or very narrow streets is decreased until the side pontoons are broken off. During flotation, the speed of the tank, even though aided by hydraulic grouser track extensions, is appreciably slower than the LVT (A) 5.

The advantages of a tank equipped with the BB Device are that (1) it can cross a major river within the space of a very few minutes and land on the hostile shore ready to fight as a standard land tank, (2) it can fire with its tank gun while moving over the water, (3) it presents a small target while afloat, and (4) little time is required to fully reconvert it to a land tank.

The disadvantages are that (1) the river bottom and bank must have a gradual slope extending toward the middle of the river to the depth of the tracks at the launching and landing points, (2) the river bottom must be firm at the landing point, (3) exit routes from the landing point must be carefully selected from the standpoint of track flotation, and (4) the logistical problem is complex.

The DD tank has all of the fighting characteristics of the M4 Series tanks when on land plus the ability to swim ashore under its own power and to wade when the water is not deep enough for flotation. The tank is held up by a canvas envelope which allows the tank to sink deeply enough in the water to displace its own weight. The canvas is raised by a series of 36 air pillars and held up by metal struts. The craft is propelled by two eighteen-inch movable propellers, which also act as rudders.

The advantages of the DD tank are that (1) it can travel at an average speed of four and one-half miles per hour and can cross any major river in the space of a very few minutes, (2) the tank can be navigated by periscope with all the crew buttoned up, and can land and deflate with all the crew members under armor, (3) the DD tank will wade in water under nine feet two inches and will float in deeper water, (4) The DD tank can drop its canvas in three seconds and become a land tank, and (5) it presents a small target while afloat.

The disadvantages of the DD tank are that (1) the canvas is easily torn by rubbing it against buildings or other obstructions in transit, (2) a tear greater than one foot may cause the tank to sink because of the inability of the bilge pump to handle the inflow of water, (3) the canvas freeboard is very low and therefore the tank is limited to a Force III wind or sea, (4) while afloat in the water the tank can fire only its fifty caliber antiaircraft gun, (5) the visibility of the crew when under armor is limited by the small vision area of the periscopes, (6) the river bottom and bank must have a gradual slope extending to the depth of the tank tracks,

(7) exit routes from the landing point must be carefully selected from the standpoint of track flotation, and (8) the logistical problem is very large.

During World War II, specially designed amphibious tanks were used and operated by organic amphibious tank battalions. Tanks employing the use of amphibious kits were issued, in the European and Mediterranean Theaters, as temporary operational replacements for the regular fighting tanks of standard tank battalions. The logistical and planning problem remains nearly the same whether tanks are issued as complete replacements or conversion is done by use of kits.

Technical Aspects of Employment

The technical aspects of the employment of amphibious tanks are many. An assembly area is necessary to receive and prepare the amphibious equipment and to act as a staging area prior to the assault. In addition to the normal requirements of a tank bivouac area it must incorporate (1) concealment from hostile observation and sound detection, (2) short marching proximity to the launching points, and (3) a good route between it and the launching point which will permit precise marching time with the minimum probability of traffic-jammed roads and the least chance of damage to equipment.

Since the friendly bank of the river is the line of departure (LD) for assault units, it is important that an assault position be chosen close to the launching points to permit last minute coordination and control and to permit small unit breakdown and movement to launching points. The area should be out of sound range and direct observation of the enemy and must have firm standing.

There should be more than one launching point prepared because (1) the use of one could be denied by enemy fire or blocked by failures of equipment, and (2) several points will allow more tanks to cross the river at one time. The physical requirements of a good launching point are that (1) suitable approaches exist to prevent damage to flotation equipment, (2) it is located at the correctly calculated distance upstream from the landing points, (3) it preferably leads into calm water, and (4) that it can be concealed or camouflaged. Pioneer work can be done to improve launching points, but work parties must be careful to conceal their activities.

Some of the factors that must be considered about the river itself are (1) the direction and rate of flow, (2) the amount of current adjacent to the landing point, (3) the variation of the waterline, (4) the presence of sand bars and islands, and (5) demolitions, wire, and other prepared obstacles. In cases of rivers having a swift current, an accepted method for control of amphibian tanks is the use of a guide cable across the river.

The landing area should have at least two exit points from the water. This is essential not only from the standpoint of probable enemy action against emerging tanks or mechanical failures at a critical time, but because all tanks may not be able to navigate to one precise point. The physical requirements of a good landing area are that (1) the gradient of the river bottom and bank falls within the climbing capabilities of the tank, (2) the bottom is firm, (3) the water adjacent to the landing point is calm, (4) the route inland from the river bank is firm and near a good road net.

A dewaterproofing area should be selected a short distance inland from the landing point to (1) provide a physical location where liaison and contact can be regained with the infantry, (2) permit the tank unit to effect reorganization after crossing, and (3) jettison waterproofing equipment. The desirable physical requirements are that (1) it provides concealment from direct antitank fire, (2) it has good standing, and (3) it is accessible to a good road net.

Tactical Employment

The decision for the employment of amphibious tanks for river crossings has been made in the past only at a very high level of command, because of the strategical plan and extra logistical problems. Some of the special problems encountered at Army level are (1) the special training of personnel of the using unit, (2) the schedule of a definite delivery time to permit the unit sufficient time to check, service, and repair the tanks, (3) the attachment of Ordnance personnel, if necessary, to aid and supervise the mounting of special amphibious devices, and (4) provisions for the recovery and salvage of the amphibious equipment upon completion of the operation.

The current tactical doctrine for an assault river crossing prescribes that the initial crossing for an infantry division will be made by one regimental combat team (RCT). It is considered that a properly balanced attachment of standard tanks to an RCT in an operation of this type is one company. The general experience of units in the Rhine River crossing has substantiated this doctrine in regard to amphibious tanks as well.

The most difficult problem confronting the RCT commander assigned to make an assault crossing, insofar as his infantry-tank plan is concerned, is to properly evaluate and balance the most desirable infantry tactical plan against the technical limitations of his supporting amphibious tanks. A logical solution to this problem can be made only by extensive reconnaissance and meticulous prior planning.

The tank reconnaissance is made as early as possible along the entire division sector by the tank battalion commander or his representative and the assault tank company commander. Primary attention must be devoted to hydrographic and terrain conditions on the hostile side of the river because these factors are least subject to change or influence by friendly action. The planning and reconnaissance for an assembly area, attack position, launching points, and the routes connecting these installations must be based on information gained about the probable landing points.

The tank unit commander formulates his plan based on his reconnaissance and study of maps, aerial photographs, and other means available. He then submits his plan to the RCT commander for integration into the over-all plan.

The primary mission of amphibious tanks in an assault river crossing is to land with the leading waves of infantry and to render close and continuous support. Cooperation is established by the customary tank-infantry team. Teams should be formed in the tank assembly area prior to movement to the river. Unlike normal ground operations, the team is then temporarily divided. The tanks and the infantry each proceed across the river by their own means in accordance with a predetermined time or signal arrangement. The reestablishment of contact can be made most effectively by having infantry guides meet the tanks in the dewaterproofing area.

Present infantry doctrine emphasizes the principle of surprise in assault crossings. Since tank engine and track noises would cancel the surprise element, the tanks should be left on the friendly side of the river until needed.

In some situations, the best available landing points will be unsuitable without pioneer improvement or removal of demolitions. When this condition exists, the tanks will have to delay their crossing until the work is completed. A system which has been found satisfactory is to have the pioneer party cross with the lead infantry elements and begin work immediately. The tank battalion reconnaissance is an excellent agency for this mission.

During the assault crossing, all supporting arms are utilized to their maximum extent. Standard tanks which must wait for bridges or ferries are idled into suitable direct fire positions during the night preceding the assault.

They are assigned zones of fire with the mission of overwatching the amphibious tanks and infantry.

It may be necessary to cross into an area known to contain massed antitank guns and other antitank defenses. Night crossings were successfully executed with amphibious tanks on the Rhine River, and their special application in this instance should be considered. When daylight attacks are required, an artificial smoke cloud might provide the same benefits.

After the bridgehead has been secured, consideration must be given to special tank maintenance problems. The assault tank company should be given sufficient time to completely dewaterproof and thoroughly lubricate their tanks. After this has been done, the tanks can continue in their normal role of infantry support.

CONCLUSION

Because of the scarcity of complete official reports on the few major river crossings made by amphibious tanks in World War II, proper evaluation is difficult. The advantages of using tanks which can cross a river under their own power must be weighed against the numerous technical and logistical problems. The outstanding conclusion drawn from studying the available information is that good results can be obtained in the use of amphibious tanks only by detailed planning and by thorough training of the operating personnel.

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TANK OPTICS

by Manfred Knayer*

A GOOD VIEW, important for all armored vehicles, is not easy to obtain. Today, tanks are fighting over distances of several miles. They also are attacked by antitank guns, by airplanes and by armor piercers over short distances. The tank constructor has to do his best to secure good observation facilities for the shortsighted armored vehicles.

Generally, the chief qualities, *i.e.*, security, large field of view, tolerable cost, hardly can be united. Loss of light is of minor importance. The eyes of the tankmen sitting in the gloom are satisfied also by a darker view.

Openings in the armor can be hidden by a dapple painting. On the other hand, it is recommendable to place a small gutter above each hole for observation, and something like a cushion at the inside to protect the man looking through it against shocks. Tanks were brought out of action by smearing their sights with clay or grease, and wipers are necessary, at least for the principal sights. All such openings must be capable to be shut tightly and quickly against flame throwers.

Slits were used in medieval towers. The view is limited, the safety is insufficient. Bullet hits, even one inch beside them, make fragments or drops of the melted lead filling enter. Wire sieve spectacles were used for protection. The British closed the slits by small plates with bores, the French made the slits wedge shaped, narrowing to the inside, the Czechs tried crosswise slits to diminish the trembling of the view by the vibrations. In later constructions, the width could be varied.

The only advantages of slits are that they are easy to make—especially in lids for openings—and that the observer gets some additional air through them. For the thick armor plates of today, they are impractical, and if your eye is to be removed to a greater distance, to aim with a gun, etc., your visual angle gets intolerably small.

Glass armored slits are a passable solution. Several plates of glass, with clear glue-like layers between them, together at least two inches thick, can stop almost any kind of a slug of a portable firearm. Strength and inertia of the first plates prevent the projectile from reaching the last ones. Against a second hit and more, protection is insufficient. The outlook is spoiled already by the first hit. Therefore such blocks, also called triplex glass, must be easily replaceable. They are not too expensive and were applied often, by the air forces; even complete turrets of shotproof glass are used.

The *stroboscope* is a solution almost forgotten. Imagine an observer with his head inside an armor cylinder with longitudinal slits. When this cylinder is revolving, his view changes. With the number of revolutions increasing so that at least 10 slits pass each second, they dissolve one in another, as the pictures in the movie, because there is a remaining effect on the retina of the eye. You get a good view all around, only a little darkened, as only a certain percentage of light can enter. To give sight to both eyes, the slits are cut in not radially, but alternatingly pointing tangent to an inner circle of two and one-half inches diameter equal the distance of the eyes. For observation in only one direction, rotating flat or conical plates may be used.

The losses of light make this apparatus useless after dusk. Hits make fragments enter the cylinder. Protection is obtained by a fixed inner cylinder or polygon of bullet-resisting glass, but a series of hits makes further observation impossible. Indeed, the stroboscope was built only in some French heavy tanks, but perhaps it might appear again some day.

Mirrors and prisms allow safe and cheap solutions, especially for inclined plates. The rays coming from the object are reflected at the front of a mirror or at the rear side of a prism, then go down to another prism or mirror, there once more reflected into the observer's eye. The use of one whole prism for both reflections is limited to a transfer over a short distance. To receive a good sight angle through a small entrance lens, such periscopes are to be built short. Often they are made movable and easily replaceable. For scout cars, large mirrors could be used, to be closed after the first contact with the enemy. Another solution would be mirrors either of polished armor or of thin sheet metal able to stand some hits.

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*Graduate German Engineer.

One of the best solutions is to unite an eightfold mirror set in a small observation turret. A device to fix a telescope inside will be of good value for the tank commander. The superiority of prisms to mirrors is more a theoretical one, except from telescopes. Soviet Russia and Germany often used the cheaper mirrors, the English and French preferred prisms, and in the U.S.A. the surplus of them had to be traded by public sales.

Telescopes for tanks have many advantages and are used very often, particularly for aiming and observation over long distances.

The astronomical telescope does not need many alterations to be fit for tank use. The rays from the object are collected by the objective. That is a converging lens of considerable focal length and would produce a real but inverted image on a screen as in all cameras. This image and also crosshairs on the screen, could be seen well defined through the eyepiece, *i.e.*, a magnifying glass. Practically, this combination works also, and is used, without a screen.

The inversion does not disturb the astronoms, but for military use, the eyepiece is to be removed farther, and another converging lens, working like a second camera, has to set right the image. Such long telescopes, consisting of extractable tubes, were used in former happier times. In modern glasses, the reinversion is obtained by a double set of prisms turning the rays when reflecting them, shortening the glass and permitting them to increase the distance of the objectives for better plastic impressions. For tank sights, length must not be detrimental. On the contrary; the gunner needs not sit close to the wall. He can have his seat deeper in the room, comfortably moving his gun.

Telescopic sights, mostly for one eye, help the tankman by three effects: Invulnerably sitting in his vehicle, he gets a wide view through a narrow hole; the enlargement facilitates detection of targets; and the marks for aiming appear as sharp as the target, while using a mechanical leaf sight, the notch cannot be seen sharp at the same time as the aim. The eye can adjust itself only to one distance at a time. To aim in a driving tank, it is also easier when the eye must not be held so very minutely in the sight axis as with mechanical sights.

For hunting, even telescopic sights with a small enlargement are used, about 1:1.5, to compensate the optical delusion that objects seen through a hole seem a little diminished. A tube of thin walls lets the view through the telescope be connected with the general view, which helps to catch fast-moving targets.

Special solutions are wanted by special problems. Here the trouble is that a great field of view, a great enlargement, and good brightness, exclude one another. Often compromises are inevitable. Variable enlargement and field of view are obtained by changing lenses, either the eyepiece by a revolver-like set, or the reinversion lens. Or we can place this lens in two positions, one more back to give a smaller image of the first inverted one, as usual in cameras, and the other one more ahead, for a greater image of a smaller part of the first image, as in a camera for a reproduction.

Gradually changeable enlargement, sometimes seen in films when a scene is drawn nearer, may be obtained when the inversion is effected by two movable lenses, in the pancratic telescope. For general survey we regulate to a small enlargement with great field of view and vice versa for exact observation and aiming, always looking through the sight.

The future tank sights will be such types. Binocular sights are preferable to monoculars. The eyes are more satisfied; besides you have security in case of hits. Elbow formed sights with a prism changing the direction of the rays allow a comfortable position of the eyepiece. Sometimes, a double prism is placed in front of the objective to prevent a greater damage by a hit.

Panoramic telescopes have many advantages. A small, turnable and inclinable prism can be directed almost everywhere. It sends the rays down over another prism to your eye. For a good view, lenses are applied. In order to avoid an inclination when the two prisms point to different directions, seeing backwards, things would stand on their heads, an auxiliary reinversion prism is placed in the neck of the instrument, turning half the angle of the head. A special prism near the eyepiece also is needed. An invention that needed a lot of patience. An important disadvantage is that you have no good feeling for the direction you are looking in, even when a corresponding scale runs through your view, contrary to the submarine periscope's turnable as a total. Besides you have no complete all around view. You cannot observe the flash of a gun only two degrees out of your view nor tank crackers attacking from three sides. The Russians equipped their tanks with such panoramic telescopes, which they called periskopes, but later they completed the observation means by a small all around observation turret. On the other hand, the tank grew higher, and sometimes it was shot off.

Range finders belong to the future equipment of any tank. When using the total width of the turret for span, which means using a basis of three yards and a 15 power enlargement, a distance of five miles may be found on 50 yards exact.

Monocular range finders consist of two objectives at least one yard distance. By prisms, lenses, etc., the rays from the objects are brought to two other prisms near the middle, placed one above the other, so the image in the eyepiece is cut in an upper and lower half. The objectives are parallel. The rays coming from a nearer point, the object, are not. So the upper image appears a little displaced from the lower. By changing either the direction of the outer prisms or the way of the rays by auxiliary prisms, etc., the images can be brought to a coincidence for a certain distance which you can read on the dial. Some types use one inverted image, others have the separation line out of the center, etc. Such range finders are simple to handle, still observation with one eye means to use only 50 per cent of our abilities.

Seeing with both eyes helps us to recognize objects as real bodies, and to judge distances. To a distant object, your eyes point in parallel directions, looking at a closer one within one foot distance, they meet it under a mutual angle of 12 degrees. If there is anything between you and a more distant background, your left side sees it better. Your eyes can also tell you that there is a difference of the distance of two objects, as long as the differences of the two images are greater than the network of the retina in your eyes, and that is an accuracy of only about 10 inches.

Binocular range finders enlarge the distance of your eyes, as similarly done with your ears in acoustic direction finders. Here, the enlarged images are seen through two eyepieces. By the increased distance of the objectives, joint with the enlargement, you can judge the distance of far objects as if they were quite close to you. Two marks, brought in both ways of the rays, symmetrically, seem to be a single one in an infinite distance. Moving one, they appear on different places in your eye and you can cause the impression of the mark coming nearer to you. You can fix such a mark right on your object and read its distance on a corresponding dial. For antiaircraft use, you can place in both your ray channels a scale of marks in zigzag lines with increasing differences in their positions. Your eyes will perceive them as milestones of a street winding from near to far. Such binocular range finders permit a quick operation, and are the preferable solution, although not everybody's eyes are able to work with them.

Range finders may be used independently movable. When constructed connectable with the gun and used for aiming, this will make them another great success.

Design and construction of telescopes is a difficult task. In old-time calculations, only enlargement, angle of view and perhaps brightness appeared. All the faults and defects had to be eliminated by experience and many tests. These defects are: Not sufficiently defined, partially dissolved, and blurred images; distortions, when the rays do not unite properly; and dispersion of the contours into rainbow colored edges. One defect may be compensated by a second one of the same negative value. Therefore, and also to get other effects, greater view through a longer tube, always a greater number of compound and a chromatic lenses are built in. On the other hand, every refracting surface causes a loss of light. Therefore, too many lenses are undesirable and crosshairs preferably are not engraved in glass plates but mounted mechanically.

Analytical calculation methods have been developed to control the way of some principal rays from the object until they meet again on the retina in the eye, and to foretell the quality of the result. Instead of changing lenses and trying many arrangements, a list of arrangements painfully is figured out and only a few test pieces are to be built. A minor degree of distortions may be admissible to increase the other qualities and does not diminish the value of a telescope. Mass production requires elaborate machines and skilled workers.

Shooting, from and on, moving objects is a difficult and often discussed problem. Four factors are to be considered: The form of the trajectory; the speeds both of the target and of the own platform; and finally the oscillations of the platform, the most difficult problem.

Tanks use to stop for firing, thus eliminating two of these troubles, but this is becoming an old-fashioned habit. The means for an exact shooting will be improved, and used by tanks as well as by the navy and the antiaircraft artillery.

Sight and gun mostly must point to different directions, if we want to hit the target. To compensate the curved form of the trajectory, the gun has to get the necessary elevation. To hit a target, we take a lead, a greater one when it is passing, a smaller one when it is approaching. We can respect this by:

1. Aiming at a point besides the target.
1. Changing the angle between gun and sight axis by
   a. Moving the sight as a total.
   b. Using auxiliary marks or a scale.
   c. Moving the crosshairs within the sight.

A tankman wants to adjust his sight while looking through it. If he gets away from the eyepiece to turn some dials, he loses his adversary and gets shot himself. We have to place either a scale of auxiliary marks, or a scale to adjust the crosshairs in the view itself. A well improved arrangement is:

For the lead:	A dial to move the crosshairs.
For the distance:	Auxiliary marks.

Other influences are: The bouncing of the gun affecting the angle of departure; side deviation caused by the rotation of the shell, and wind; the distance from the sight to the gun axis, amounting up to four feet. Indeed, a lot of things to be known by the gunner.

The rocking of the tank makes it impossible to shoot exactly; even practicing on a rocking stand does not help much. The Americans solved the problem by building an oscillations eliminating stabilizer for Sherman's cannon, and opened a new evolution. Similar apparatus had been used for light ship artillery.

To keep 6- and 8-inch cannons, the future tank armament, at the target, will be more difficult. Their masses are greater, and a tank is pitching faster than a ship. Therefore, only the sight will be stabilized by a sort of a petravic-pendulum with a gyroscope. The gun will be electrically discharged when swinging through the proper position—a system of the heavy ship artillery. The carriage constructors will do their best to secure a smooth, slow pitching.

Other observation means are: The Austrian Goerz all-round periscope, working like a multiple set of cameras. Light enters through a small, easily replaceable lens, is reflected down by a prism on a greater mirror, then meeting a screen simultaneously being a magnifying glass. Protection is excellent, but the pictures on the screen are dark. In France, the collimateur was developed. On the gun a short glass bar of square or semicircle profile is mounted. On one end, a mark is engraved, on the other one near the gunner's eye, it is arched like a magnifying glass. You see the mark like through a reading glass and aim by bringing it in the direction to the target. Then, there is the reflex sight. The gunner looks through a glass plate inclined toward him, in which a lighted sign behind a magnifying glass is reflected so as it appears in the direction of the aim. The glass does not limit the view, so this model is preferred when a general survey is needed and possible, so in the air forces.

Tracers show us the trajectory. An old trick to a sure hit with the cannon is to fire first some tracers with the machine gun until you have hit the target, and then send a shell behind them. But we must not forget, that there is a distance and a difference between the cannon's and the machine gun's trajectory. Besides, it is curved downwards, so we get the impression that our tracers fly over the target, while arrived there, they already have sunk deeper than it is.

Flashlights were mounted on poachers' rifles as well as on tank guns. They may be all right for surprise, but better apparatus have been invented.

Shooting at night has become an exact affair since radar and heat radiation can be used. The R.C.A. tells us, that they built portable snipercopes for carbines enabling you to hit a man at 75 yards distance. So we may assume that tankborne sets have a range of miles. Normal telescopes are valuable also at night, only tankmen are to be trained as night fighters especially to utilize the greatest sensibility of the eye situated besides the main visual direction. For seeing through fog, we put on yellowish or polarization filters, keeping back the disturbing bluish or disordered rays reflected by the dust, and letting pass those from the object.

The future optical equipment for a tank will be numerous:

1. For the driver, and loading gunner, a double or triple set of prism periscopes; plus a telescopic sight for the radio operator's machine gun, enabling them to act as auxiliary observers.
2. The gunner aims through a range finder connected with an electrical automatic calculation apparatus training the gun by motors, as used by the navy antiaircraft; besides there is a simple telescopic sight with variable enlargement for close fight and emergency. Both may be stabilized. Smoke after firing a round is blown away by compressed air.
3. The commander receives an all around observation tower, a powerful glass for observation, plus several periscopes. The expenses will amount to about $30,000, not too much when the lives of five buddies are at stake.

Warfare has become complicated. Only a highly developed industry can produce such precision instruments.

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THE R. N. S. S.

by Trevor Blore

In this article written exclusively for The Armored Cavalry Journal Commander Blore tells of the work of the Royal Naval Scientific Service in experimentation on atomic power for battleships and other advanced methods.

ALTHOUGH Britain's Royal Navy, on which most navies of the world were originally modeled, has been popularly accused of Nelsonian stodginess, the truth is that it has long been up with the leaders in the field of scientific research.

In the words of a prewar advertisement for an important oil company, it has "that little extra something the others haven't got,"—the Royal Naval Scientific Service (R.N.S.S.). This is a separate civilian entity within the Service proper, as distinct from the scientific research departments and branches of the other Fighting Services. This embraces more than a thousand of the best scientific and technical brains in Britain working in conjunction with naval officers in specialized fields to give Britain and the British Commonwealth of Nations the most scientifically designed and equipped Navy that the financial condition of the country permits.

But, while the Royal Air Force has long publicized its "boffins" and "back-room boys," the Navy has been more reticent about its older scientific organization.

It should not cause surprise that the Royal Navy is so science-minded, since every ship of war is a most complex masterpiece of technical and scientific development. Not only in the sphere of weapons and machinery, but even in such simple matters as ventilation and air conditioning.

Now the Navy is, naturally, taking its share in atomic research. In a recent conversation with the newly promoted Chief of the R.N.S.S., I asked how he envisaged the effect of the development of atomic energy upon the Navy of the future. He explained that the R.N.S.S. was not thinking of nuclear fission in mere terms of destruction through bigger, better and brighter atomic bombs, but as a new means of marine propulsion. Naval scientists are already contemplating the day of the atomic battleship.

Strategic Lessons

The strategic lessons of the Bikini experiments, yet to be fully revealed, are not the immediate consideration of the R.N.S.S. These are for the admirals to think about. But the R.N.S.S. is interested in the physical effects of atomic explosion and their influence on warship construction and defense.

In Britain research into atomic energy comes under the control of the Ministry of Supply, which is responsible for building and equipping atomic research stations. Therefore, the Royal Naval Scientific Service is seconding some of its best brains to this research work under the aegis of the Ministry of Supply. Such naval civilian scientists will have constantly in mind the idea of atomic energy for marine propulsion, and will eventually form a nucleus within the R.N.S.S. for the application of atomic energy to the Royal Navy.

The battleship is likely to be the first atomically propelled "vehicle" in the world, for two good reasons. Firstly, it is the one "vehicle" to provide the space to accommodate an atomic pile as a source of power. That is why naval scientists envisage a battleship with an atomic pile for a boiler room. Secondly, the construction of an atomic battleship is not as subject to economic considerations as an atomic "Queen Elizabeth."

While some of the best brains of the Scientific Service are devoted to atomic problems, a large number of its scientists and technicians concentrates on a wide range of immediate problems.

Their research ranges from new underwater weapons to investigation of living conditions which may mean the difference of life or death to a submariner, or mere comfort or discomfort to a sailor in a battleship.

For instance, the Admiralty Signal Establishment at Haslemere, in Sussex is one of the homes of radar. Naval experts were the first to specialize in radio tubes, and though they were not the actual midwives of radar, they did develop the tubes which eventually gave radar its pinpoint precision. One of the naval officers who contributed towards this in the earlier days was a signals expert whose name is world-famous, Rear Admiral Earl Mountbatten. Now the Navy, under the new interlocking system of inter-Service cooperation, is responsible for the development of radio tubes for all British Services, and research in this field stems from the Service Electronic Research Laboratory under the direction of the Director of Physical Research, Admiralty.

Another important line of research is that of underwater warfare. Naval scientists have a proud record in this field. Despite the official parsimony which cramped the Royal Navy in the years of retrenchment between World Wars I and II, the Admiralty managed to keep alive its committee of experts on underwater warfare which perfected the Asdic in time to cope with the German U-boat menace from the outbreak of World War II. Asdic is a triumph of British naval scientists which played an important part in winning the vital Battle of the Atlantic for the Allies.

Research in this field still progresses in various establishments of the Royal Naval Scientific Service, such as the Underwater Development Establishment at a port in Southern England, where one destroyer is fitted out as a seagoing laboratory, the Torpedo Establishment on the Clyde, the Admiralty Mining Establishment, near Portsmouth, and the Admiralty Research Laboratory on the outskirts of London.

Decisive Influence

This research is of vital importance. To judge by the evidence so far available, submarine activity is probably the branch of sea warfare least affected by the advent of the atom bomb. The submarine is still one of the most decisive influences at sea, particularly in view of developments in speed and underwater stamina and improvements in torpedoes evolved by the Germans too late to be fully brought to bear in World War II.

Submarines of the future will be fast underwater cruisers, with a high submerged endurance, and firing swift, long-range torpedoes.

Just as the submarine has made important strides under the German spur of necessity, so have the countermeasures been developed by British naval scientists. We have left behind the days of rough-and-ready combat against the U-boat with Asdic and depth charges, and moved into the new sphere of underwater projectiles, which are as superior in controllability compared with depth charges as shells are to aerial bombs. Even during World War II considerable progress was made along these lines with weapons such as "Squid" and "Shark," and today the underwater projectile is being perfected to fight the submarine of the future.

Another field in which British scientists and serving officers scored a triumph, a field in which they were able to give great assistance to the United States Navy, was that of frogmen. German scientists were the first in this field, but British Servicemen and scientists lost no time in beating them at their own game.

Gunnery, too, has been revolutionized, not least by the advent of radar. One of the finest examples of the wartime application of radar to gunnery was supplied by the Battle of the North Cape, when H.M.S. *Duke of York* sank the last undamaged major unit of the German fleet, the *Scharnhorst*, in December 1943. As the *Scharnhorst*, shepherded by British cruisers, came within radar range of "The Duke," the battleship's radar provided the necessary data for keeping the big guns ranged on the enemy so accurately that the first broadside, fired in darkness at an unseen enemy, resulted in several hits—a rare success even under more favorable daylight gunnery conditions.

Since then still greater advances in radar-ranging and other niceties of precise modern gunnery, such as remote control and greatly increased rate of fire, have been evolved by both Navy and Army officers and scientists at the Admiralty Gunnery Establishment and Research Laboratory on the outskirts of London.

Here, too, they can show you another aspect of scientific research—the anatomical chair.

Human Element

Even with the greatest development of mechanical control, there is still the human element to be considered. Gunnery officers with their assistance, the rate and spotting officers, must still operate the machine. They must sit for hours in their control positions, subject to strain and weariness. So scientists have worked out for them the most comfortable conditions. Hence the anatomical chair, the most comfortable seat for an officer in a gunnery control position. This was built from a design worked out by scientists after measuring the posteriors of hundreds of men and striking an average.

This is only one aspect of the scientific study of the human element in naval warfare. This branch is the sphere of research for the experts of the Royal Naval Physiological Laboratory just outside Gosport. It is no impressive scientific center with large, glistening laboratories, but an old house with a huddle of tin huts, where scientists study the hundred-and-one problems of "livability" in all kinds of ships of war under all possible conditions.

One of the senior members of this Establishment recently figured in the world's news when, using a frogman's suit in the icy waters off Labrador, he ran foul of a whale and nearly lost his life.

These civilian scientists of the Royal Navy do not necessarily stick to laboratory bench or desk. They take a leading part in sea experiments, and often undertake dangerous tests of devices or equipment which they have evolved.

Now the R.N.S.S. is even sending some of its members to sea in uniform to get a closer appreciation of the element for which they work, just as the Constructor Corps of naval architects have long done.

The Royal Navy is definitely moving towards the time when major warships will all carry a scientific officer who will be at least as important as a gunnery officer.

That is the logical line of development for the Royal Naval Scientific Service.

U. S. CONSTABULARY HORSE CAVALRY

by Ray E. Williams

On our far-flung occupation fronts the horse plays a small but important part in the duty scheme. At work or on show the tradition goes on.

THE cavalry horse and the horse soldier, colorful survivors of the world's first mobile armed forces, are still active in one modern theater of operation—in occupied Germany's American Zone—as part of the security force of the United States Constabulary.

"As long as the U.S. Constabulary retains its police function in Germany, horse soldiers will be necessary to perform missions in terrain unsuitable to motorized and mechanized units." That is the 1948 statement of Constabulary's deputy chief of staff in charge of operations, placing the mark of approval for a job well done by the mounted troopers, and pointing up the necessity for this type of soldiery in occupied Germany today.

In the rough mountain areas and forested stretches impractical to the most modern of "unstoppable" vehicles, the cavalry trooper and his horse still accomplish difficult missions. Where jeeps, weasels, tanks and ducks find the going impassable even to their specialized cross-country abilities, the horseman is still king. He has mobility to outstrip the man on foot—only other practical method of travel there—and he commands the respect of the pedestrian with the authority inherent in the mounted man over the man on foot. He can cover from two to four times the area that can be patrolled by the foot soldier and do it more efficiently.

The table of organization in the United States Constabulary provides one platoon of horse troopers to each regiment. The platoon dates back to the origin of the Constabulary in 1946. Even before the present elite security force of the American Zone became fully operational on July 1, 1946, the horse platoons had been planned and were in training as part of the command of Major General Ernest N. Harmon. They were conceived as necessary specialized units and were earmarked for strenuous duty where their capabilities made them most suitable for use.

The platoon is small and compact. It includes one officer and 32 enlisted men. Thirty horses are contained in each unit, all of German army origin, from SS and Wehrmacht units who utilized horses widely in areas unfavorable to vehicles. At V-E day, there were many excellent horses left in the ruin of the Nazi war machine and some of these were desirable cavalry types, trained by the Germans as cavalry mounts.

There is a rating for every man in the Constabulary horse platoon, once he qualifies for his job. There is a Technician Fifth Grade rating or higher for every man. The following chart shows the platoon organization:

PLATOON HQ:
1 Off, Lt, CO
1 Tech Sgt, Plat Sgt
1 Staff Sgt, Stable Sgt
1 Tech 3, Horseshoer
1 Cpl, Scout Msgr
1 Tech 5, Wireman

1ST SECTION:
1 Staff Sgt
1 Sgt
6 Tech 5, Troopers
1 Tech 5, Chauffeur

2ND SECTION:
(Same as 1st)

3RD SECTION:
(Same as 1st)

ARMS:
33 Pistols, Cal .45
27 Rifles, M1
4 Submachine Guns
30 Machetes, 18 in

TRANSPORTATION:
4 Tractors, 5-6 ton, 4x4 w/w
4 Semitrailers, 4-6 ton
30 Horses, riding

ORGANIZATIONAL EQUIPMENT:
4 SCR 300 Radios
1 Tank, watering M1940
30 Bags, feeding
29 Saddles, McClellan M1928
1 Saddle, Mil, Phillips

INDIVIDUAL EQUIPMENT:
Same as Constab with extra Breeches and Boots, riding

The horse trooper must first of all be a good soldier. He must be alert, aggressive and capable of acting on his own initiative. He must be a skilled policeman, a capable rider, an expert with his pistol and other weapons and he must be able to care for his mount and additional equipment.

Advantages of using horse soldiers in controlling disturbances and disorders are well known. In Germany the inherent respect of the man on the ground for mounted authority is even more marked. This factor has been appropriately utilized by commanders having horse troopers at their disposal.

This T/O is still in use. It is flexible and can be varied as the mission requires, permitting use of the unit as a whole or use in its component parts, each reasonably complete in itself.

Advocates of increased use of horse platoons recommend additional horses to provide organic relief and rotation of the animals on the more difficult assignments and the addition of one or more basics to the headquarters section to provide a larger platoon reserve and to make possible better rotation for the field sections. The need for two radio-equipped jeeps is also pointed out since present communication, provided by four SCR 300s, offers only sketchy intra-platoon contacts and the mounts are difficult to carry through wooded stretches or over rough terrain on a rider's back. They are also difficult to operate at the "carry" and are subject to the usual limitations of this particular equipment in performance.

The platoon carries no kitchen section and has a minimum of small one or two-burner gasoline field heating units. When operating alone the platoon must use civilian equipment and privately hired cooks or depend upon emergency rations which are not satisfactory in continuous operations. In joint operations the platoon is attached to a squadron or troop of Constabulary and can depend upon the parent organization for both communications and messing.

A typical "joint operation" where a horse platoon is attached to a troop of Constabulary, is exemplified by an operation near Fulda in Greater Hesse last spring. Here, in addition to the usual difficulties encountered in operating tight border patrols along the American-Russian Zone boundaries, the job was complicated by old-fashioned "cattle rustling."

Two large displaced persons concentrations were critical points in the area. Illegal border crossers with their eyes on edible beef-on-the-hoof were tempted by the considerable stocks of cattle on the American side. The DPs, brought to Germany as war laborers, had little love for Germans but a marked attraction for fresh meat. Cattle rustling flourished as a well-organized industry, synchronized by mock-up shootings and disorders against Germans in one community while other gangs quietly spirited away animals from nearby communities which had been left alone while troops rushed to riot call duties. It was a situation ideal for horse soldiers who could patrol and comb the wooded areas and hidden crannies in which the cattle could be concealed until darkness made their removal possible.

To meet this particular situation, a large perimeter was established, generally enclosing the threatened livestock. Regular vehicle patrols from the troop circled the roadnet of the area or were held in readiness to be dispatched by radio to intercept any point of the perimeter. The interior and "rough spots" were assigned to mounted patrols.

In daylight hours the cavalrymen rode the high ground, scouting from peak OPs with field glasses. From these vantage points alarms could be sent by radio to the platoon NCS or riders could dash to radio cars of the troop, located in known positions. At night the troopers patrolled the low grounds, observing skyline silhouettes. They established night listening posts in more critical areas. Jeep patrols were contacted when necessary and given intercept missions, leaving the horses available for close searching and ground-combing.

The solution did not stop cattle thefts entirely as it was necessary to patrol a large area, heavily populated or infiltrated by potential cattle rustlers. However, it did reduce it to a minor irritation, recovered many stolen cattle and resulted in arrest of several hundred individuals suspected of connection with the activity. Control work is still a necessity in this area to safeguard property from depredations.

A typical operation of a platoon working independently was a Rhine river mission in the spring of 1946. The horse unit took over a frontier of more than 36 miles along the Rhine river boundary between the French and American zones, where smuggling, illegal crossings and similar activities, largely carried on by means of boats, were numerous. The area was marshy, dotted by canals and streams available to small boat traffic, and contained much wooded area in which border violators could hide.

To accomplish his mission, the platoon commander set up his CP at the south end of the stretch, established a midway point at the center of the frontier and a terminal point at the north end. Each day two trailers were dispatched to these points, one with eight riders to the Midway, one with four to the north point. The trailers were parked and returned with different crews at the end of patrol, terminal points being from 18 to 20 miles from starting points. From midway, four men, operating as two-man patrols, went north and four went south, the latter to end at the CP-South point. Four men worked north to Midway from the CP anchor and four worked south from the north point. The patrols ranged along varied routes, staggered hours to prevent "time tabling" by their hard-working adversaries.

Patrols operated seven days a week for ten months. In addition to the regular patrols, many of which were conducted at night, the platoon conducted search-and-seize operations in suspected centers. It built up an imposing patrol log with total mileage rivaling that of a full troop of Constabulary equipped with jeeps, armored cars and motorcycles. It arrested an impressive number of illegal border crossers, found quantities of illegal gasoline, tires and other black market items, many from Army sources, and built up a general record that earned commendation from the commanding general.

So strenuous was this operation on the horses that General Harmon dispatched several additional mounts to the unit to afford relief for the hard-working animals.

Operating without a mess section, the platoon commander established a platoon kitchen in a German gasthaus, had meals prepared by German cooks and operated his unit as a king-size unit. The patrolling troopers carried lunches on patrols, avoiding emergency rations, thus saving both money and appetites. Hot coffee was available at the Midway.

In still another type of operation, a horse platoon was split into sections and the sections were attached to separate squadrons, thinning the unit almost to the disappearing point. It allowed some horse soldiers where their capabilities were most needed, however, and the horsemen covered difficult gaps along a wide frontier.

On 15 March, 1947, Military Government took over the borders with German Border Police. Constabulary units took up another operational phase, withdrawing to kasernes and holding squadrons as intact as possible. A belt in depth behind the border was then patrolled with check points and shifting road blocks, and a reserve was always available to be rushed to the border crossing points upon call. With this phase entered and the heavy patrol schedule reduced along the zonal boundaries, the work of the horse platoons was lightened and some were withdrawn for "palace guard" work and training at large headquarters establishments. One of these is the superbly trained platoon attached to the crack 16th Squadron in Berlin. It is widely used in honor guard duties and lends color and pomp to ceremonies in the quadripartite capital.

However the platoon carries its full share in responsibilities of the 16th Squadron which has the twofold mission of maintaining security in the American sector of Berlin and of patroling the 75-mile stretch of the Autobahn and its feeder roads between Berlin and Helmstadt.

Another outstanding platoon is the swank 15th Regiment horse unit currently assigned to Constabulary Headquarters in Heidelberg. The platoon continues a strenuous training schedule in addition to its special events calendar. Drill is held daily with "jumping" twice a week. One successful horse show, featuring the platoon's jumps and precision drill, was held in October and more are planned.

Rotation of the horse units provides variety, and places the horse soldiers where they are most needed. These assignments are not based primarily upon organic assignment, however. For example, when the 15th Regiment sent its platoon to Constabulary Headquarters to succeed the second platoon which had been there, the 15th Regiment drew the 6th Regiment's platoon for operations and the 6th was assigned the platoon of the 11th Regiment which had an area where horses were not critical.

The 14th Regiment's platoon which will hold its second Organizational Day on July 1, 1948, is currently in operation around Kassel and Fulda in Northern Hesse. It assists in maintaining Russian-American border security and cooperates closely with the German Border Police there. This platoon rolls up a daily patrol average of some 100 miles, operates check points and road blocks, runs a daily train check and is charged with checking DP installations there.

A Constabulary trooper on patrol in a rough area of the occupation zone in Germany.

The 11th Regiment, before March 15, 1947, operated the Czechoslovakian border and, to cover "blind" spots, accessible to horses, divided its platoon into sections and attached these sections on a squadron basis. The first section was attached to the Eighth Squadron and patrolled 8,000 miles in six months of operations, in addition to conducting raids. One of these, a swoop on a border hotel in an isolated spot, resulted in the arrest of 46 persons involved in illegal border crossing activities.

The second section operated with the 94th squadron and was based in a ski lodge at Silberhutte, formerly the recreation center for SS troopers who had charge of Flossenberg Concentration Camp. The third section was attached to the 51st Squadron and patrolled its rough sections of border from a base at Haidmuhle. All sections did excellent work.

The number of horse soldiers in the American Zone today is not large—less than 200 enlisted men. Their job has never been soft. It was made more difficult by mounts trained in the German manner and understanding only German commands, but it has been a prized assignment and much sought after by Constabulary men who could qualify.

Selection of horse troopers is based upon keen competition and survival of the fittest. Best type soldiers with experience in handling horses are given priority and for each request from units, three men are usually sent to compete for the vacancy. The best of these are retained, others with promise might be given extra training as prospective cavalry replacements.

Esprit de Corps in the horse platoons is high. The horse soldiers believe they are good and the record of operations proves it.

Armored Division Associations

First Armored Division Association

The 1st Armored Division Association will hold its 1st Annual Convention during the period 15-16-17 July, 1948, in Louisville, Kentucky. Hotel reservations may be obtained through the Chairman of the Convention Committee, Lieutenant Colonel L. V. Hightower, A.F.F. Board No. 2, Ft. Knox, Kentucky.

This Association of former personnel of "Old Ironsides" Division was originally organized in 1945 in Germany when the Division was de-activated. From that time to 1 May, 1947, the Association was inactive, but due to the efforts of a small group of men located in Washington and throughout the country, notably Colonel C. C. Benson, Colonel Peter C. Hains 3rd, Major Frank B. Clay and others, the association can today boast of 700 members located in 45 States, The District of Columbia, Canal Zone, European Theater and Korea.

An important and interesting program has been arranged for the Convention, including adoption of the Constitution and By-Laws, report on the preparation and publication of the Division History and an organization and membership campaign. The social side of the Convention will feature many unit reunions, along with other events. It is hoped that as many of the 25,000 former living members of the Division as possible will attend.

A meeting of temporary National Headquarters will be held May 20th for the election of temporary officers, approval of the final draft of the Constitution for submission to the Convention and preliminary report of the Convention Committee.

Further details on the Association may be obtained from the attached list of persons.

Persons desiring information on the First Armored Division ("Old Ironsides") Association may write or call:

Washington D. C. and vicinity

Colonel Peter C. Hains, President, The Pentagon, or 619 Upland Place, Alexandria, Virginia.

Colonel C. C. Benson, Historian and Chairman, Membership Committee, Historical Division, Department of the Army, The Pentagon, Washington, D. C.

* * *

Third Armored Division

Members of the Third Armored Division Association held their first annual reunion in Chicago recently. Plans were taken in hand for the setting up of a permanent Association. Lieutenant General Walton H. Walker and Major General Doyle O. Hickey were honored guests, and about 2000 former members of the division and its attached units attended. Plans for local chapters were formulated, and Paul W. Corrigan of 80 Federal Street, Boston 10, Massachusetts, was elected Secretary-Treasurer of the Association. He may be contacted for all information.

* * *

Fifth Armored Division

The Fifth Armored Division Association will hold its second annual reunion at Hotel Cleveland in Cleveland, Ohio, on August 12-14. Subsidiary unit reunions within the large Association convention are a part of the schedule. Convention Chairman Thomas B. Bartel has announced that Governor Herbert of Ohio will welcome the group to the Buckeye State. A turnout of some 800 members is anticipated, and with ladies welcome this may well run the count in excess of 1000. For information: Mr. J. A. Beluscak, 3769 W. 134th Street, Cleveland 11, Ohio.

* * *

Seventh Armored Division

Seventh Armored Division Association is contemplating publication of a history at sometime in the future. This will be one of the big subjects on the agenda at the forthcoming convention for which the dates of September 26 and 27 have been set, with the city of Pittsburgh selected as the site.

* * *

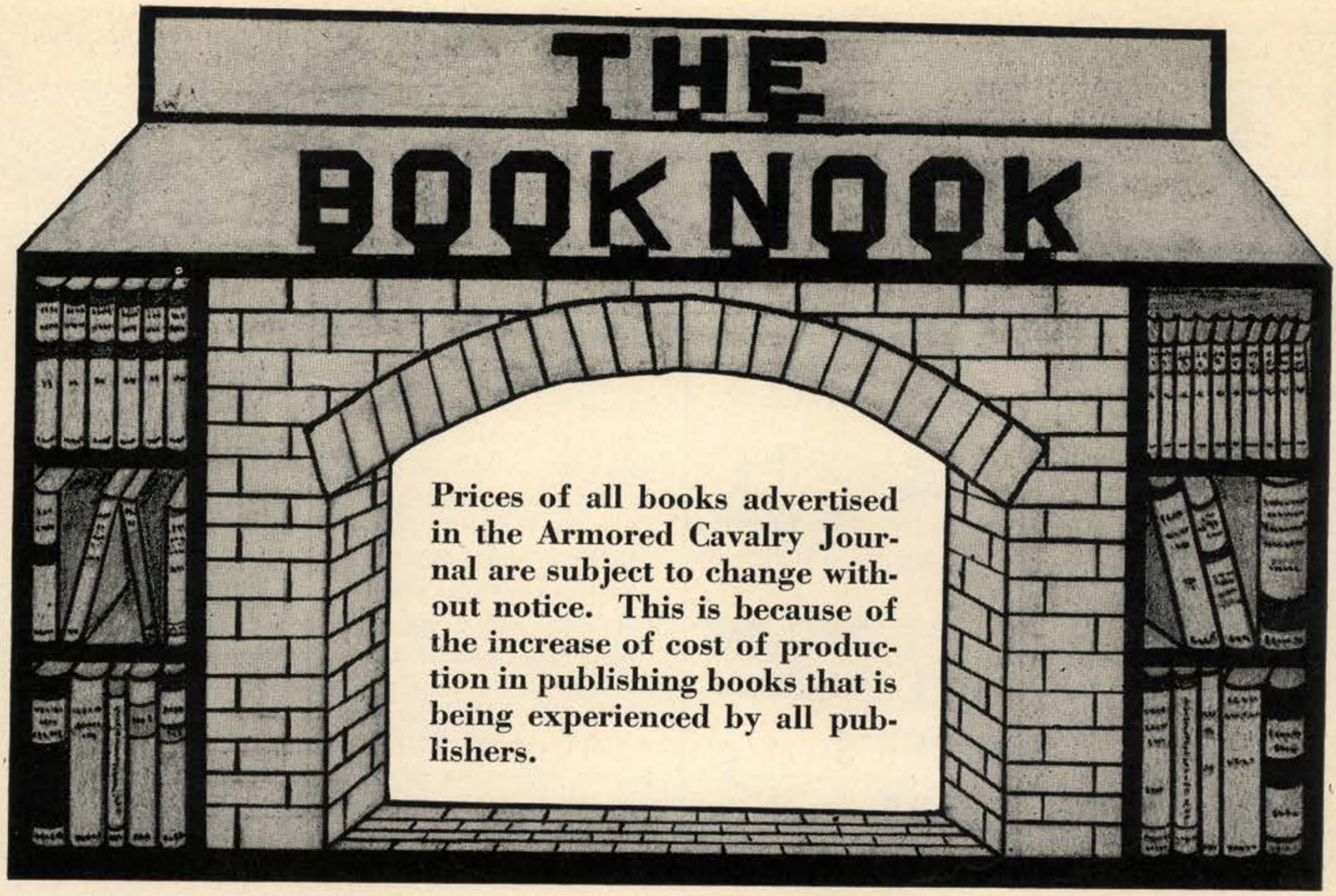
Eleventh Armored Division

The big event for the Eleventh Armored Division Association is the birth of the long-awaited history book of the division, Thunderbolt. The book is in the closing stages at the printer, and by the time this is read should be in the hands of most of the paid up members. The amount of time and effort expended in the publication of this work will pay off for Thunderbolt members in a prized possession. Under the guidance of General Holbrook a worthwhile result is assured, contributed to through the additional value of supervision by 11th AD Alumnist Perlmuter on the publishing end.

* * *

First Cavalry Division

El Paso, Texas, has been selected, appropriately, as the site of the first postwar reunion of the First Cavalry Division Association. Registrar of the Association, Colonel Edmund P. Stone has announced the big event for the dates 8 to 10 November, 1948. Three chapters have been organized; Number One at El Paso, Number Two at Lawrence, Massachusetts, and Number Three at Fort Sill, Oklahoma. To date some 600 Association members have announced their intention to attend the '48 reunion in El Paso.



Prices of all books advertised in the Armored Cavalry Journal are subject to change without notice. This is because of the increase of cost of production in publishing books that is being experienced by all publishers.

NORMANDY TO THE BALTIC. By Field Marshal The Viscount Montgomery of Alamein. Houghton Mifflin. $5.00.

Just published in the United States is Marshal Montgomery's latest book on the recent war. Titled *Normandy to the Baltic,* this is the sequel to his previous work *Eighth Army:Alamein to the River Sangro.* The current story begins with Monty's return to England to assume command of 21st Army Group. The title brackets the material.

In his foreword the author states as his object the presentation for study by the officers of Rhine Army of a factual account of the part played by 21 Army Group in the conquest of Germany. Obviously, such a book as this must have a wider purpose in consideration of the command responsibility that was Monty's in an Allied scheme. Indeed, this is one of the general military works of the day on the greatest of all wars, and fits the shelf as recognized history.

This is top level perspective. The author moves groups, armies and corps with the facility of a squad leader deploying his men in basic battle drill. It is a valuable analysis of enemy action in relation to Allied operations. Monty appraises the German delay in estimating the Beachhead situation, and the lack of coordination, particularly in armor, in meeting the Allied landings. He describes the three-week period within which two-thirds of the German armor in France—some eight divisions—were employed, unsuccessfully, in crust, cushion and hammer.

There is indication here of the influence of hindsight in the drawing of a narrative. Almost, the thought intrudes that everything went "according to plan." If the reader is made conscious of the personal pronoun he should grant the justification for it. Anyone seeking to find within the pages of Marshal Montgomery's book a further cultivation of the differences posed in many of the less restrained, more readable war stories will be disappointed. The book is what he states it to be: a factual account of the part played by 21 Army Group in the conquest of Germany.

The two-color maps are excellent, as are composition, stock and format. Written by one of the leading military men of the day, *Normandy to the Baltic* is a necessary leaf in the pages of the book on history's greatest war.—W. G. B.

* * *

THE PRICE OF POWER. By Hanson Baldwin. Harper. $3.75.

The title to Hanson Baldwin's new book is in a way the measure of our day. *The Price of Power* pinpoints the moment, the world, civilization. Not long past—in fact, within the sliver of history which is this decade—there would have been a prompting to wonder whether the full evolution of this thesis might better have been served had the word Peace been substituted for the word Power. In today's consciousness, peace has become almost a contingent. Power is the essential. Thus the mark of the times.

We have come a long way in a short time since the sway of the "war to end war" philosophy. With the expiration of that nice ideology in the explosion of the late war, the American mind has advanced tentatively into a most uncertain postwar world. The uncertainties, the vacillations, the incompatibilities demand definition. *The Price of Power* is a part of the response. It could not be more opportune.

Mr. Baldwin's address to "the problem of American power in the atomic age" is a fine contact point for a lot of our groping. He accomplishes two-pronged diversionary attacks upon artistic idealism and brutal realism, while the main effort centers upon an "eyes-on-the-stars-feet-in-the-mud" objective. The nice fusion of these limiting factors

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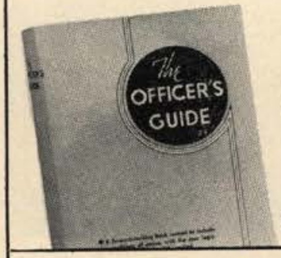

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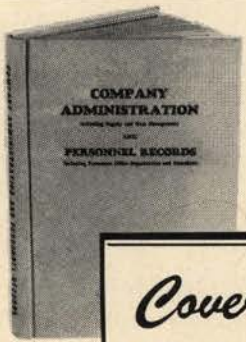

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* * *

CIVILIZATION ON TRIAL. By Arnold J. Toynbee. Oxford University Press. $3.50.

The remarkable subscription of the reading public to Arnold Toynbee's *A Study of History* in the popular abridgement by Somervell is perhaps advance assurance of the success of the latest work by one of the greater historians of the day. Also a contributing reason might be the general seeking for something which Toynbee is able to supply.

Toynbee is more readily undertaken from within the framework of an advanced formal education. A sound knowledge of history certainly is a valuable asset, if not a prerequisite, to full appreciation of his richness and profundity. However, there is much in his new book, as in his other work, for any and every reader.

Civilization on Trial is a collection of papers, some written expressly for the book, many variously published within the last year, several the basis of lectures delivered many years in the past, all falling neatly into a pattern, and with a unity of substance. The book will prod the world citizen into making a study of the trends in history. It will prompt an evaluation of history, and an application of its lessons to our present civilization. It considers the course of history and our ability to affect adverse forces enough to guide our destiny into positive channels, thus obviating the pitfalls of past eras.

Among thirteen chapters there are essays on The Graeco-Roman Civilization, The International Outlook, Civilization on Trial, Russia's Byzantine Heritage, Christianity and Civilization, and Islam, the West and the Future. In his chapter, Does History Repeat Itself, Historian Toynbee analyzes the cycles of history, refuses to subscribe to inevitability, and offers Western Civilization a firm pledge for hope in their fundamental ability to resolve sure moribundity simply by intelligent meeting of civilization's problems. He leaves no doubt that the trial is in progress.

By way of his learning and wisdom Toynbee has reduced to more general grasp some of the mysteries of the depths.—W. G. B.

* * *

I SAW POLAND BETRAYED. By Arthur Bliss Lane. Bobbs-Merrill. $3.50.

There is substantial support in many areas in our country today for an expanded and realistic policy in government in the world-wide dissemination of information as an aid to the peoples of the world in estimating world ideologies. The Western ideology has for the most part exercised free complacency, while the Eastern method of calculated dishonesty and viscious propaganda has held sway. Limited governmental information dissemination has been supplemented by important commercial sources. In this field lies Arthur Bliss Lane's *I Saw Poland Betrayed.*

Mr. Lane is a career diplomat. He was our Ambassador to Poland from 1944 to 1947. He paced Poland's misfortune step by step, striving for an alleviation of her plight, deploring the enervation of policies at odds with Russia's, and accumulating such a store of futility that he resigned his post to tell the story in the hope of contributing to world perspective. If there is any sensation here it is the senation of stark truth, supported by documentation, and translated in terms of intellectual honesty. It is at once an expose of weaknesses in policy and the strength of the unscrupulous, and an appeal for firmness as a replacement for appeasement in dealing with the unprincipled.—W. G. B.

* * *

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Fiction

April 25	May 2	May 9	This Week	
1	1	3	1	Raintree County. *Lockridge*
5	4	1	2	Pilgrim's Inn. *Goudge*
2	2	2	3	The Ides of March. *Wilder*
3	3	4	4	Eagle in the Sky. *Mason*
		8	5	The Golden Hawk. *Yerby*
6	5	6	6	The Bishop's Mantle. *Turnbull*
4	6	5	7	House Divided. *Williams*
		10	8	Parris Mitchell of Kings Row.
7	7	7	9	The Time Is Noon. *Haydn*
16	11	9	10	Fire. *Stewart*
12	9	13	11	No Trumpet Before Him. *White*
9	13	11	12	Son of the Moon. *Hitrec*
8	8	16	13	East Side, West Side. *Davenport*
14	14	12	14	Cry, the Beloved Country. *Paton*
			15	Everybody Slept Here. *Arnold*
			16	Never Love a Stranger. *Robbins*

General

April 25	May 2	May 9	This Week	
1	1	1	1	Peace of Mind. *Liebman*
2	2	2	2	Jim Farley's Story. *Farley*
3	3	3	3	Sexual Behavior in the Human Male.
4	4	4	4	Information Please Almanac 1948.
5	5	6	5	Inside U. S. A. *Gunther*
	9	7	6	Roosevelt and the Coming of the War.
6	6	5	7	A Study of History. *Toynbee*
			8	The Goebbels Diaries. *Lochner*
		14	9	On Active Service. *Stimson and Bundy*
9	8	8	10	Inside Story of the Pendergast Machine.
		9	11	A Russian Journal. *Steinbeck and Capa*
7	7	12	12	The Proper Bostonians. *Amory*
16	11	11	13	A Guide to Confident Living. *Peale*
			14	Free Admission. *Chase*
8	10	10	15	The Last Billionaire. *Richards*
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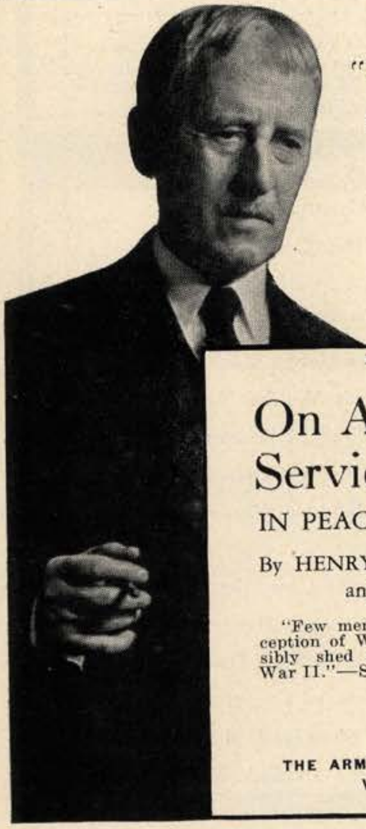

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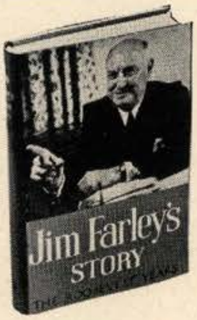

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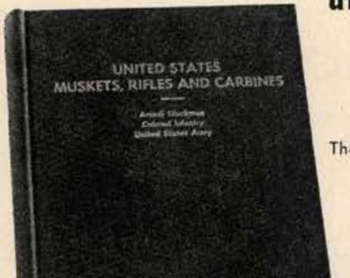

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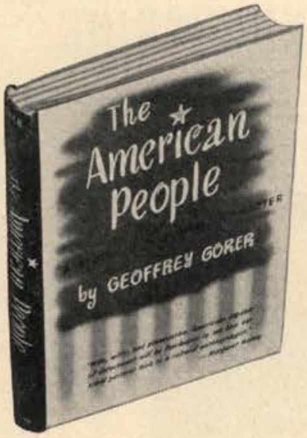

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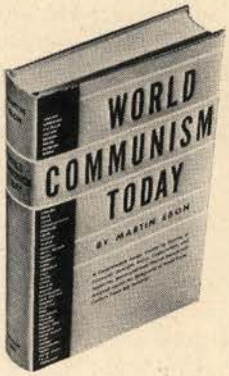

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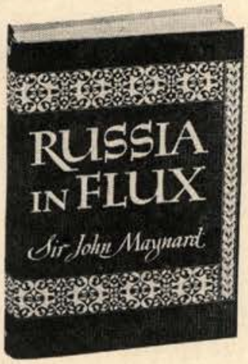

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8th Armored Division	Published	Unknown
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10th Armored Division	Published	Unknown
11th Armored Division	Just published	ACJnl, $5.00
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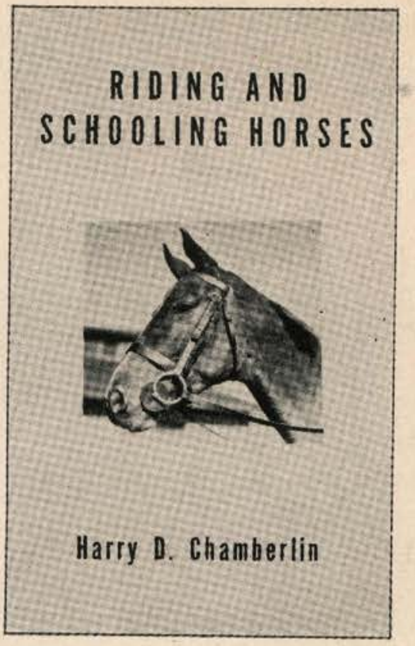

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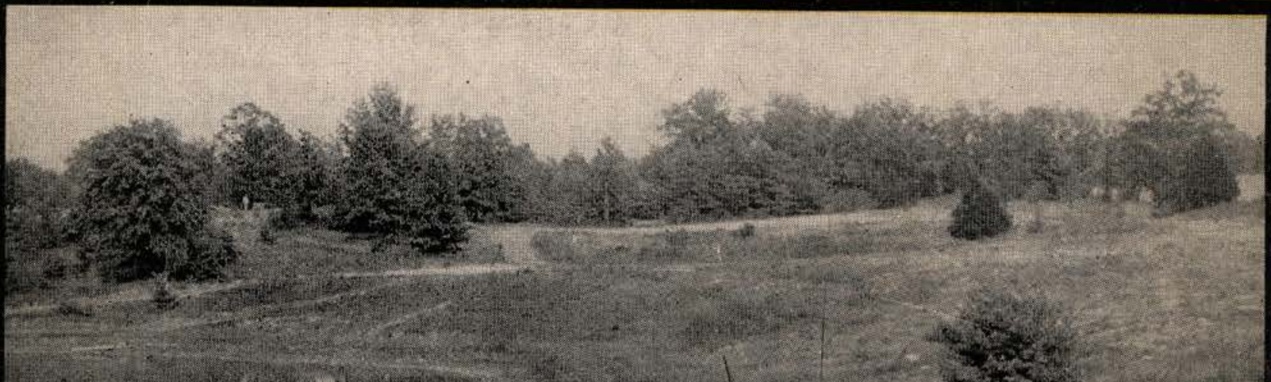

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Published Bimonthly by The U. S. Armored Cavalry Association

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Publication date: 25 July 1948. Deadline date, next issue: 15 August 1948.

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. . . often referred to during World War II as the "third largest city in Kentucky," is universally known as the Home of American Armor. It is here that the development in mechanization of elements of our ground forces has been concentrated.

The history of Fort Knox dates back to 1903, when it came under consideration as a reservation, and maps of the section were drawn up and presented to the War Department together with plans and sketches. Soon thereafter some 10,000 acres were leased and 30,000 troops were moved into the area to participate in the Army's first large-scale maneuvers.

Plans to erect a camp lay idle to 1918 when funds were appropriated for the purchase of 40,000 acres to establish a training center for Field Artillery. The site was named Camp Knox in honor of General Henry Knox, Commander of Artillery during the Revolutionary War and later Secretary of War. Construction was begun but was halted with the Armistice.

In 1919 an additional appropriation was made for the purchase of more land, and until 1931 the area was used for training of National Guard, ROTC, CMTC and ORC elements of Fifth Corps.

In 1931 Camp Knox was visited by General Van Voorhis, original commander of the mechanized cavalry. He was accompanied by members of a War Department delegation, and Knox was selected as most suitable for the organization and training of a mechanized cavalry brigade.

In 1932 the post was designated as a permanent establishment and the name became Fort Knox. Many permanent buildings were constructed, including barracks, quarters, a post headquarters, hospital and a sewage disposal plant. More land was purchased, until today the post covers an area of 107,000 acres and is the largest in the ZI.

In 1935 the Treasury Department established the Gold Depository here, wherein reposes most of the world's gold. During World War II this beautiful building held also the Constitution, the Declaration of Independence, the British Magna Carta, the Gutenberg Bible, and the original of Lincoln's Gettysburg Address.

The Armored Force as such came into being in July of 1940, prodded by German victories in Poland. Fort Knox became the headquarters of the new arm, and to General Chaffee fell the staggering task of building a new military segment during peacetime. Fort Knox became the birthplace of armor, with its proximity to our great industrial centers aiding greatly in the program of expansion. Today there exists at Knox one of the leading centers of military science, tactics and techniques.

Major units on the post include The Armored School, the Third Armored Division, the UMT Experimental Unit, the 2128th Area Service Unit, the Food Service School, The Medical Department Field Research Laboratory and Army Field Forces Board No. 2, all under the command of the Armored Center. The 315th Army Air Force Base Unit is stationed at Godman Field, a part of the Reservation.

Today Fort Knox is the focal point of armor and is more than ever the embodiment of the name which is the outgrowth of early experimentation, and which World War II brought to fruition—The Home of American Armor!

A MESSAGE FROM THE COMMANDING GENERAL, THE ARMORED CENTER

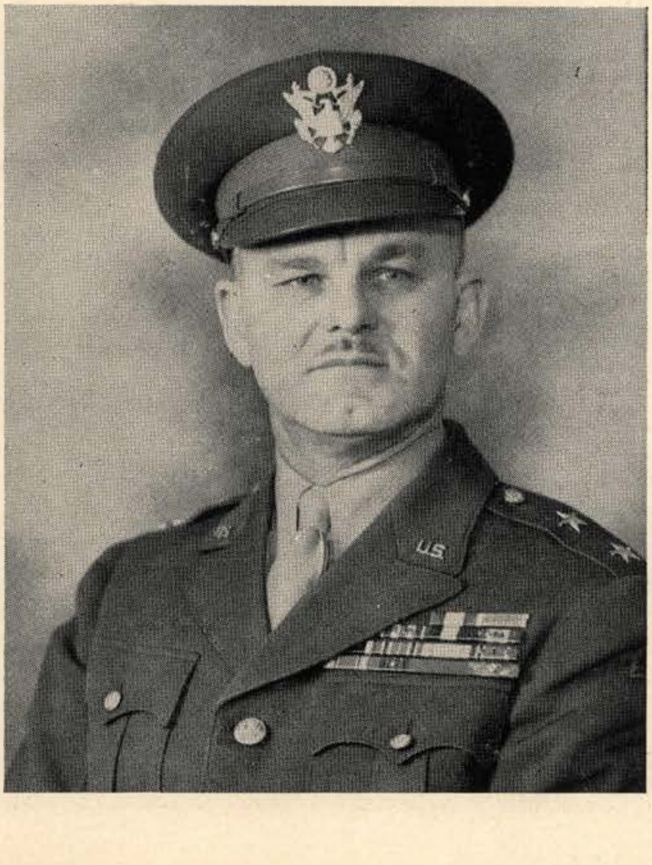
I consider my assignment as Commanding General, The Armored Center, and Commandant, The Armored School, the greatest honor that it has been my privilege to receive. When I think of the commanders who have preceded me, and the standards they have established, I feel quite humble. I am resolved to maintain those standards and to exercise every effort to improve upon them.

During the past few years much has been said about "Push-button" Warfare; so much that many people today are entertaining serious doubts as to the place of the field forces in our scheme of national defense. Many are wondering, quite seriously, if the Army today offers a worthwhile career. Actually, never in our history has the Army offered more of a challenge to sound thinking and good judgment; never has there been a greater requirement for professional skill. In the foreseeable future ground field forces will be required for seizing and holding bases—naval and air—and for overcoming both airborne and ground enemy forces.

I do not need to emphasize the role the Armored Forces will play in any future conflict. As in the past, the armored divisions will be called upon to provide highly mobile, hard-hitting striking units which were so spectacularly successful in breakthrough and exploitation in the recent war. Armor will always be needed to deliver the quick, knockout blow. Although the armored division is fully mechanized, with more guns and machines of destruction than any other land force of equal size, personnel problems are of more importance than ever before. The machine is merely the instrument of destruction: the soldier furnishes the brain, the will and the courage. As the machines become more technical and intricate, the soldier must in turn be more highly specialized, possessing the basic knowledge of his equipment and of the multiple arms that go to make up the armored division.

Today men of vision are essential. Today more than ever before there is a great premium on leaders. We must have advanced thinking, experimentation, development and training. We must qualify ourselves so that we will be ready for new weapons when they become available.

As the new Commanding General of The Armored Center I will do everything in my power to the end that The Armored Center, in its present day revitalized training role, will continue to turn out highly skilled specialists capable of keeping American Armor abreast of the latest developments in military science.



Major General William G. Livesay, Commanding General, The Armored Center and Fort Knox, began his military career as a private when he enlisted in the Regular Army on May 3, 1915. He received a commission as first lieutenant of Infantry November 26, 1916, and landed with the first contingent in France in June, 1917, assigned to the 28th Infantry, 1st Division. During World War II General Livesay commanded the 91st Infantry Division in Italy. In early June, 1947, General Livesay was assigned as Chief of the United States Army Group of the American Mission to Greece in connection with the aid program for that country. He took over his present assignment at Fort Knox on June 15th.

THE ARMORED CENTER

THE ARMORED CENTER'S COMMANDING GENERAL THESE PAST TWO YEARS TELLS US THE STORY OF THIS FOCAL POINT OF ARMORED CAVALRY-FIELD FORCES ACTIVITY.

by Major General John W. Leonard

THE Armored Center at Fort Knox is very naturally known as The Home of Armor. From its development in the lean days before the war, on through its tremendous expansion into a triumphant wartime striking force and up to its existing future-minded establishment, American armor has been centered at Fort Knox.

The Armored Center comprises a group of installations described in other articles in this issue of The ARMORED CAVALRY JOURNAL. They are The Armored School, Army Field Forces Board No. 2, the Third Armored Division, and the Universal Military Training Experimental Unit. In addition, there are the post at Fort Knox, the 2128th Area Service Unit Station Complement, the Medical Department Field Research Laboratory, Godman Air Field, the Food Service School, and various other attached units. With a military population of over 25,000, it is the largest post in the United States.

Such a sizable and varied collection of units representing so many different aspects of the Army's activities attracts a host of visitors to Fort Knox. They range from the thousand or more distinguished military and civilian leaders from all over the world who were entertained officially last year to the innumerable motorists who see the sign on the Dixie Highway—FORT KNOX—THE HOME OF THE ARMORED SCHOOL—VISITORS WELCOME—and turn in to visit the Patton Museum and tour the post before continuing on their journeys.

The traditions of American Armor have been centered at Fort Knox since 1932 when the mechanized force at Fort Eustis, Virginia, was broken up and the First Cavalry Regiment was mechanized and moved from Marfa, Texas, to Fort Knox. Colonel (later General) Van Voorhis had selected Camp Knox in 1931 because he believed the fledgling force there would not be dominated by the chief of any branch. The force was small and the equipment meager, but men with vision were looking ahead.

Major General John W. Leonard graduated from the U. S. Military Academy in 1915. During the First World War he won the Distinguished Service Cross serving in France with the Sixth Infantry Regiment of the Fifth Division. As Executive Officer of Pershing's Composite Regiment after the war he took part in Victory Parades in Paris, London, New York and Washington.

General Leonard was Commanding General of the Ninth Armored Division during World War II; the division that fought so effectively on widely separated fronts during the Battle of the Bulge, and later seized the famous Ludendorff Bridge over the Rhine River at Remagen. He has just completed a two-year tour as Commanding General of The Armored Center, having left in mid-June to assume the post of Military Attache in London.

General Van Voorhis later wrote: "It might be interesting to note that in 1933 I was advised by the War Department that two German officers, one an Ordnance tank expert from Germany, the other a German staff officer attending our school at Leavenworth, would visit Knox to see what we were developing in the way of mechanization. These officers remained for three days and manifested a good deal of interest in our activity. They were not particularly interested in our equipment, which certainly was not very formidable at the time, but were interested in our conception of the proper equipment. They were keenly interested in our views on the proper tactical and strategical employment of mechanized forces. . . . As late as 1938 the Germans made frequent visits to Knox. I was very much interested when the Germans overran Poland to see how closely their operations coincided with our conception of the employment of Armored Forces."

Though funds for American mechanization were slim and official opinion often lukewarm, the Germans found in the United States isolated groups of men with sound ideas on the organization and employment of Armored Forces.

In 1938 Colonel Adna R. Chaffee returned from a tour of duty in Washington to assume command of the newly activated 7th Cavalry Brigade (Mechanized). Until his retirement in broken health from overwork, he was the driving force behind armor. Through his efforts the Sixth Infantry was ordered to Fort Knox to join the Mechanized Cavalry Brigade in the Louisiana-Georgia Maneuvers of 1940. In these maneuvers the tank began to come into its own, and the German victories in Poland had made the tank question urgent. Thereafter, progress and expansion were rapid. On 10 July 1940 the Armored Force was born when the War Department issued the directive stating: "For purposes of service test, an Armored Force is created." The words "service test" were used because the National Defense Act of 1920 made no provision for a separate Armored Branch.

It came as no surprise when General Chaffee was designated the first Chief of the Armored Force. To him fell the task of building a new military arm while America was at peace and funds were limited.

Following the activation of the Armored Force in 1940, the Armored School, the Armored Force Replacement Training Center (now the Third Armored Division) and the Armored Force Board were set up in rapid succession.

After General Jacob L. Devers became Chief of the Armored Force in August of 1941, it developed and expanded beyond even the dreams of its first Chief. He built up a tremendous amount of personal support in industry and in the Army. This support proved of great value in an organization like the Armored Force, which depended for its strength upon a wide variety of arms and services, together with American industry, for the tools with which to forge the armored thunderbolt. The proximity of Fort Knox to such industrial centers as Detroit, aided by personal liaison with private manufacturers in the area, helped considerably in the program of expansion.

When Army Ground Forces was established in March of 1942 there was little doubt that the Armored Force was one of the most self-sufficient of the commands under control of the Ground Forces. It continued in that position and developed its character by virtue of the close contacts it had already established with all of the arms and services having component parts in the Armored Force. Until this time it had commanded all armored units within the continental limits of the United States. Now command passed to Army Ground Forces, though the Armored Force retained inspection functions to determine readiness for overseas shipment and planning responsibilities for all armored units.

After General Alvan C. Gillem, Jr., succeeded General Devers it was felt that the name "Force" in the title "Armored Force" caused some confusion due to the establishment of the Ground, Service and Air Forces, and that the "Armored Command" would be a more accurate designation on a plane with the Airborne Command, the Anti-Aircraft Command and the other commands under Army Ground Forces. It still retained inspection functions with respect to all armored units in training in the United States. And in February of 1944 it was again redesignated, this time to its present title, The Armored Center.

From activation on 10 July 1940, the Armored Force advanced substantially in experimental work, training and organization. It produced 11,852 second lieutenants at the Officer Candidate School; it organized and trained four corps headquarters; it organized and trained sixteen armored divisions, all of which engaged in combat, and it turned out some sixty-five tank battalions and a number of amphibious tractor battalions. All but a few of these saw combat.

Following a brief period of inactivity, The Armored Center was reactivated on the First of November in 1946. Efforts were immediately concentrated upon the task of consolidating the tremendous gains made during the war and of stepping to the vanguard to pace military science in an advancing world.

November of 1946 also saw the activation at Fort Knox of the Universal Military Training Experimental Unit, and the focusing of the nation's attention upon this important test in military training. Also in the same month the first shipments of General Patton's collection of artillery pieces, armored vehicles, self-propelled guns, small arms, ammunition specimens and uniforms were received from Europe, and became the nucleus of Patton Museum.

To keep alive the traditions of the Third Armored Division, and to eliminate some of the negative factors inherent in the replacement system idea by providing identity and organizational features for the benefit of personnel, the Armored Replacement Training Center became the Third Armored Division.

During the academic year just completed the curriculum of The Armored School has been broadened to include division-level general staff instruction, something previously covered only at the Command and General Staff College at Fort Leavenworth.

We are proud of the achievements being made by the component units of The Armored Center—in experimental research by Army Field Forces Board No. 2 and the Medical Department Field Research Laboratory—in academic training at The Armored School—and in training by the Third Armored Division. We are confident that American Armor faces the future strong, vital, and aggressive; ready for whatever the future may bring.

PATTON MUSEUM

FORT KNOX, Kentucky, the "Home of Armor," is also, very appropriately, the home of the Patton Museum. The Third U. S. Army, during its history-making drive through Europe, had collected large quantities of enemy weapons, vehicles and equipment. General Patton, aware of the value of such material for military study and research purposes, had directed that such a collection be made. Then, in June 1946, the War Department ordered that this enemy matériel be designated "The Patton Collection," be shipped from Europe to The Armored School and kept intact at Fort Knox. The Armored School housed this varied sample of enemy military might in an immense building, and published orders designating it as "The Patton Museum," a permanent memorial to the outstanding exponent of United States armored training and combat effectiveness in World War II.

The building, well located in The Armored School area, is divided into two main wings, several small rooms and two balconies. The north wing contains foreign artillery pieces and some fifty towed weapons of varied sizes. The south wing houses the vehicular equipment, tanks, self-propelled guns, personnel carriers, armored cars and larger items. Small arms, radio equipment, uniforms, flags and items of similar nature are displayed on the balconies and in the small rooms.

All of the Patton Collection was used by the German Army against the Allies. However, it is not all of German manufacture. Many of the weapons were used by the Russians, French, Czechs, and other Allied nations against the Germans, then captured and used by the Nazis against the Allies, a vicious cycle.

The largest gun on the museum floor is a German 170mm gun. It is 42 feet long, weighs 20 tons, and it fired a projectile weighing 138 pounds. The smallest is a Czech 37mm antitank gun that was captured by the Nazis, rebored to fit their ammunition, and placed back in use. Also in the collection are Russian 154mm and 57mm guns and Czech and Yugoslav 100mm guns that fell into German hands. Other pieces include Nazi 105mm, 75mm and 50mm weapons and one four-barrel 20mm antiaircraft gun as well as the notorious German 88mm multi-purpose weapons.

At present, the largest tank in the museum is a Mark V Panther, a 45-ton job that mounts a potent weapon, the long barrel 75mm gun. A Mark VI giant tiger tank is en route to Fort Knox and will be displayed at the museum in the near future. Other vehicles on display are the Mark III tank, a 150mm self-propelled gun on a Mark IV chassis, a 75mm dual purpose gun on a Mark III chassis, an eight-wheeled armored car, a 75mm antitank gun, a four-wheeled armored car, and a medium personnel carrier mounting a 75mm assault gun.

The original Patton Collection has been greatly augmented by donations of individuals who are interested in this establishment. Also, various departments of The Armored School have given items of foreign military equipment. In fact, the bulk of the Japanese matériel displayed came from one of these departments. Donations of this type continue to come in and are always welcome for display purposes. More than 1,000 pictures which trace the growth of the Armored force and Fort Knox cover the walls and balconies of the building. Also, many combat shots are included in the photo collection.

The museum is open seven days a week to both the general public and military personnel. It has tremendous popular appeal, with as many as 500 to 1200 visitors attending on some days. Two items, donated by Major General John W. Leonard, former Commanding General of the Armored Center, are high on the public interest list. They are the Remagen Bridge sign, taken when General Leonard's Ninth Armored Division established that famous bridgehead on the Rhine's east bank, and an exact replica of the table given to Adolf Hitler by Chief of the German Work Program, Doctor Todt, on the occasion of Hitler's fiftieth birthday. This table top of solid brass has engraved on it an outline of the vast autobahn, or super-highways that form a network of military roads covering Germany. A jeep that the late General Patton used in combat is on display and proves to be a very interesting item. Another vehicle that is expected at the Patton Museum is the trailer that General Patton used as a command post during combat in Europe.

The Patton Museum is being maintained and improved daily by Master Sergeants Charles L. Parker, Robert L. Irey and Luther E. Hoggard and Technical Sergeant Ernest E. Massey.

THE ARMORED SCHOOL

by Lieutenant Colonel M. M. Brown

The Secretary of The Armored School traces its development and reviews current activities in the Army's college for Armored Cavalry.

OFTEN described as the largest school of its kind in the world, The Armored School at Fort Knox, Kentucky is the great technical college of the Armored Cavalry and the school of the Armored Division. Geared to roll some 35,000 students off its human assembly line each year, the school in eight years has transformed the rolling wooded hills of northern Kentucky into an army installation of more than 500 buildings, miles of road, and many gunnery and tank driving ranges. It was constructed and equipped at an original cost of some $20,000,000.

Brigadier General Bruce C. Clarke is a graduate of the United States Military Academy, Class of 1925. He was commissioned in the Corps of Engineers. In 1941 he became Division Engineer of the 4th Armored Division. Subsequently he commanded Combat Command "A" of the 4th Armored and Combat Command "B" of the 7th Armored Division.

In 1945 General Clarke went to Army Ground Forces as Deputy Chief, and later Chief, of the Plans Division. He was assigned to The Armored Center and became Assistant Commandant of The Armored School in February of this year.

Formation of the school followed closely the organization of the Armored Force in July 1940. The organization of the Armored Force brought with it the immediate problem of training the large number of technicians necessary to perform the specialized tasks of mechanized war. An analysis of the requirements of the infant Armored Force showed that 800 officers and 7,200 enlisted men should be trained over a twelve-month period.

The answer to this vast training problem was The Armored Force School, established by directive of Major General Adna R. Chaffee, Chief of the Armored Force, on August 7, 1940. Lieutenant Colonel (now Major General) Stephen G. Henry was selected as the officer to plan, organize, and operate the school which originally included a Replacement Training Center; however, before the first students arrived into the school's brand-new classrooms, the Replacement Training Center was redesignated as a separate installation. This was on October 1, 1940.

The original need in armored units was for tank mechanics, automotive mechanics, radio operators, radio repairmen, and clerk typists, with the additional need for specialized instruction at the level of company and battalion commanders. Hence the formation of the Armored Force School with its great emphasis on specialist training.

The physical plant of the Armored Force School was predicated on the type of instruction which was to be given, as well as the number of students to be trained in the various specialties of armored units. In order to have sufficient space for the physical layout of the academic buildings, and the barracks for students and assigned personnel, the northern section of Fort Knox was selected. The area originally allotted was approximately six-tenths of a mile long by a half mile wide. The first Headquarters and Planning Center for the newly activated school was in a concrete mess hall originally designed for summer camps of the civilian components.

The construction program was one of vast proportions, there being 68 buildings for housing, supply, and administration of the anticipated student load, and about 40 buildings for housing the instructional staff and the overhead personnel necessary to man this large plant. With hundreds of civilian construction men on the job, buildings mushroomed with amazing speed and were occupied by the instructional staff as fast as the last painter or carpenter moved out.

One sidelight to the building program was the construction of a full-scale LST (Landing Ship Tank) building for the purpose of solving ventilation problems which cropped up when tank engines were warmed up prior to debarkation from the ship. This structure was completed in the early spring of 1942, and the first ventilation test completed on June 8, 1942. The building, some 600 miles from the Atlantic Ocean, is purported to be the first LST completed for use in World War II.

Simultaneously with the construction of buildings the problems of equipment and personnel were getting their share of attention. The resources of the tank school at Fort Benning and the Communication and

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Lieutenant Colonel M. M. Brown is a graduate of Virginia Military Institute, Class of 1931. During the late war he served as G-2 of the First Armored Division. He is now Secretary of the Armored School.

Pre-course student orientation on armored vehicle.

Motor Schools formerly operated by the 7th Cavalry Brigade (Mechanized), Fort Knox, Kentucky, were made available to the Armored Force School during the latter part of September. Major (now Colonel) Robert G. Howie came from Fort Benning to take over as Executive Officer and to help organize the school. A cadre of enlisted men arrived from Fort Benning on October 10, 1940. The First and Second Armored Divisions also provided a part of the original personnel. On November 4, 1940, the first students were enrolled in the new plant.

The original curriculum was broken down into eight departments. These were the Tank, Wheeled Vehicle, Communication, Tactics, Gunnery, Field Engineering, Motorcycle, and Clerical Departments. The courses were planned to operate on four cycles of three months each, in order to produce the desired annual quota. Very soon after the school opened, the expansion of the Armored Force to six divisions and fifteen GHQ tank battalions made these plans obsolete. The expansion of the physical plant of the Armored Force School was impracticable in the time allotted and also because of the expenditures such expansion would entail. A physical expansion would also leave the school with an enormous excess capacity when the emergency was over. Learning that the three-month cycle did not use the entire plant all of the time, an innovation was adopted from private industry.

Remembering the mass production methods of the automobile industries, which, for example, do not await the completion of one unit before starting another, a plan was formulated to use all of the equipment all of the time. The major courses were broken down into phases. By dividing the tank mechanics course into ten phases of six working days each and introducing each six days a new increment of soldiers, some 1440 soldier students could be trained at the same time.

This phasing had several additional advantages. A student who became ill and was hospitalized in the middle of the course or who was granted an emergency furlough because of a death in his immediate family, or who for any other pertinent reason was forced to miss a part of the course, did not need to wait for the start of another three-month cycle. Instead, he lost only a very few days, since a new phase began every week. Students who, by reason of a lack of previous education or mechanical training, failed to grasp certain essential material in the brief time available, could repeat a particular phase and thus have an opportunity to master the lessons they found difficult.

The instructors were able to become experts by teaching a particular phase over and over. If they showed a tendency to grow stale, they were switched to another phase, perhaps taking that part of the course for a week or two as students until they became almost as familiar with that phase as with the one they had been teaching.

On February 3, 1941 it was necessary to further augment the capacity of the school. The Armored Force was again being expanded and the number of specialists who had to be trained also increased. On this date, the two-shifts-per-day system was inaugurated. Again the Armored Force had discarded army educational traditions and borrowed successfully from private industry.

Under the two-shifts-per-day system, students on the first shift marched into classrooms at 0600, remaining until noon. At 1300 the men on the second shift took their places, and remained on the job until 1900. By means of the two-shift system and the staggered increments, the output of the school was tripled.

The next step in the expansion of the school was to meet the great increase in production adequate for the needs of the armored force after Pearl Harbor. This expansion in the capacity of the school was accomplished by shortening nearly all of the courses and by lengthening of the morning and afternoon shifts from six to seven hours. These changes were effected March 13, 1942. Most of the courses then were on a six-day basis with students on the first shift attending class from 0600 to 1300, and the afternoon shift from 1300 to 2000. The peak capacity of the Armored Force School was reached at this time, and amounted to nearly 10,000 students present in the school at one time.

During these early days of specialist training, the instruction, as far as possible, was broken down into small groups. An entire class would listen to a lecture, take part in the discussion, and watch the instructor in charge perform a demonstration. Then the class was divided into small groups, usually from four to eight men, under an assistant instructor, for the performance of practical work. This permitted a greater amount of personal attention to be given to the student, particularly to the slower groups.

In all departments, greatest possible use was made of visual aids. Huge charts, many times larger than the mechanical part they illustrate, are much more effective than words in explaining how guns and vehicles operate. In addition to charts and diagrams, visual aids take the form of wooden working models, cutaway sections, and movie film strips. Among the more dramatic instructional aids at The Armored School during this period were an ingenious tank identification table; the Haskard Map representing a large section of the English countryside in the vicinity of Salisbury; a large scale terrain table of a training area at Fort Knox; and tables on which were constructed facsimiles of the Civil War battle grounds in the vicinity of Gettysburg.

In testing the achievement of students, practical examinations were employed wherever possible. In this manner a constant check was maintained on all students. The slower students were given more attention and the fast learners were pushed on. These practical tests were supplemented from time to time by written and oral quizzes.

The need for changes in the type of instruction and for frequent breaks was recognized particularly in those courses, such as code and clerical classes, involving close attention to detail. Since no student could be expected to type or to listen to code for seven successive hours without losing interest, or without becoming unduly fatigued, such classes were divided into two divisions. In the Clerical Department the student would type for fifty minutes, have a ten-minute break, and then go to a conference for fifty minutes on army administrative methods, and so on for the seven-hour shift. Thus, the typewriter was used fourteen hours each day, and actually served four different men—two on the morning shift and two in the afternoon. Code classes in the Communication Department were conducted in a similar manner. Tedium thus was minimized.

For those students able to become proficient in their specialty in a shorter period of time than that normally allotted for the course, graduation and return to their unit took place as soon as they had satisfied the requirements for completion of the course. Likewise, for the student unable to become proficient in the normal time allotted to the course, graduation was retarded and the student repeated with the next increment that phase or portion of the course in which he had not become proficient. By this method, the highly intelligent, able, and willing student was trained and returned to his unit without delay, while the slow learner was brought to a similar stage of proficiency over a longer time and academic failures were almost eliminated.

The School was divided originally into three main divisions—the Academic Group, the Training Group, and the Demonstration Regiment. The Training Group was the housekeeping division. It housed, fed, paid, administered and gave basic military training to students attending the school. Originally known as The Armored Force School Detachment, it was redesignated as the Training Group on December 4, 1941, and expanded until, in 1943, it consisted of four regiments; 1st, 2d, and 3d Student Regiments, the Instructor Regiment, and the Student Officer Group. The organization within the Training Group has varied from time to time depending upon the number of students in the school. The Training Group now consists of the 1st and 2d Student Companies, a Student Officer Company, and the Instructor Company. It has been redesignated the Student Battalion, The Armored School, under command of the Commandant of Students.

The Demonstration Regiment was a miniature armored division containing in skeleton form all the elements that went to make up a division of the armored force. Its purpose was to present tactical, maintenance, and logistical demonstrations, and furnish such troops and matériel as were needed for the practical training of students in the academic departments. The regiment was organized in January 1942. In May 1944 the Demonstration Regiment and Table of Organization Units assigned to the school were combined into School Troops, The Armored School, with the same mission as was assigned to the Demonstration Regiment, plus the additional mission of training Table of Organization and Equipment Units for overseas shipment.

By the middle of 1943 there were nine academic departments; the activities of which were many and varied. The courses given at that time ranged from four to fourteen weeks in length.

While the mission of the various courses was to train selected officers and enlisted men for the specialties of war, it has often been pointed out that the individuals who flow through the school acquire knowledge which benefits them the rest of their lives. Thousands of the technicians have been able to start on new careers, since the training they received at The Armored School has been beneficial in peacetime pursuits as well as in war.

During the fall and winter of 1942-43, a rugged battle training course was built by units of the Demonstration Regiment. The purpose of the course was to develop within the individual fighter a high degree of self-con-

Tactics Department—training on the Haskard Map.

fidence, courage, and aggressiveness in battle; to train him in the tactics of close combat so that even after his principal weapon, vehicle, and supplies were lost or destroyed in battle, he might still be capable of continuing as a potent threat to the enemy; to coordinate and exploit mental and physical condition concurrently. Three days of training was given to all students in the Officer Candidate School, and to the students of the Company Officers' Tactics Course.

The Battle Training Course included an obstacle course, infiltration course, battle firing, woods fighting, village street fighting, hand to hand combat, grenade, and booby traps. Instruction was carried on by eight officers and thirty enlisted men of the Battle Training Section of the Tactics Department.

In April 1943, the 73d WAAC Company from the 2d WAAC Training Center, Daytona Beach, Florida, was assigned to the school. One hundred thirty auxiliaries assumed clerical and administrative jobs in the school, releasing a similar number of soldiers for duty with troops. On June 1, 1943 the 73d WAAC Company was redesignated as the WAAC Detachment, The Armored Force School.

Late in February 1943 , General Henry, the original Commandant of the School, and Colonel Howie, original Executive of the School, were relieved of their assignments. General Henry was named Commanding General of the 20th Armored Division, and Colonel Howie became the Armored Force Liaison Officer at Aberdeen Proving Ground, Maryland. Colonel Joseph A. Holly of the Armored Force Board succeeded General Henry as Commandant, and was promoted to Brigadier General on March 18, 1943. Colonel Charles S. Johnson moved from the Tactics Department to become Assistant Commandant.

The original Cadre of 155 officers and men who started the school had expanded to 40 officers and 1,458 enlisted men by March 1941, at which time most departments were fully operative. In May 1943 the operating personnel consisted of 700 officers and 5,500 enlisted men. Of the school's more than 500 buildings, 67 were then in use for instructional purposes alone.

In the beginning, The Armored Force School was a small centralized unit. Its administration was relatively simple. The system was centralized around and directly under the control of the Commandant, and the Headquarters was composed of the Commandant, Executive, Secretary, and a Personnel Section.

The immediate problem to be worked out was the proper handling of the records, and accountability of the personnel to be trained, and the receiving and shipping of students. These problems remained troublesome even as late as the latter part of 1941.

During the first month of 1942, the school had reached an over-all strength of nearly 7,000 students and assigned personnel. By this time the administrative setup was based on an organization of a command head, namely, the Commandant and his Staff, the three student regiments, which housed and fed all students, and the Instructor Regiment to care for instructor personnel. These regiments were coordinated under a Training Group Headquarters.

The activation of the Demonstration Regiment and the Officer Candidate School made a total of six regiments under one command. All administration passed through the Commandant and Staff, and was handled by the following sub-sections: an Operations Section which coordinated all plans and training of the Academic Group; a Personnel Section, for both enlisted and officers; a Statistical Section, whose principal function was to operate as a locator center; an Academic Records Section which controlled the incoming and outgoing students and recorded their grades; and a Classification Section with the normal classification functions.

In November 1942 the School contained approximately 15,000 enlisted men, divided into 8,000 students and 7,000 cadre. At this point it became necessary to standardize all the administrative procedures of the School. The Commandant and Staff Section was organized along the lines of a General Staff, composed of two basic divisions under the Commandant. They were the Academic Group and the Administrative Group. Under the Assistant Commandant all matters academic were consolidated to operate by the direction and coordination of the Operations Section. The administration of the School was controlled by the S-1 and The Adjutant General under the direction of the Executive. All other administrative sections were divided under these two sections for control.

Using this system, policy was established by the Commandant upon recommendation of his staff, the unit commanders, and department directors, and then was carried out by responsible staff officers and agency heads. By using this system, a rigid control of command was maintained, but efficient functioning was secured through the complete decentralization of authority.

After the formation of the last armored division, the demand for specialists was somewhat lowered. The need was then only for replacements for battle casualties and attrition within armored organizations. This caused a decrease in the enrollment of the School and a slight change in the methods and content of instruction.

Students during this period came from two sources—from Table of Organization Units in the field, and from the Armored Replacement Training Center. Those students from units in the field were trained and returned to their same units, while those from the Armored Replacement Training Center were trained and shipped to overseas or continental stations as armored replacements.

In 1945, after V-E Day, the emphasis of all instruction in The Armored School was turned to point toward the Pacific and the War with Japan. This necessitated a change in the instruction in the various departments so that the student was familiarized with the Japanese tactics and with the maps available for use in that theater of war. Great changes were made in the Battle Training Course to adapt this course to the Japanese tactics and technique, even to the extent of changing the appearance of the buildings to give them a psuedo-Japanese appearance.

Then came the Atomic Bomb and V-J Day, followed by deactivation of many armored divisions and armored battalions. The need for a tremendous number of specialists was over. At this point the emphasis in the School changed from highly specialized instruction, to the mission of giving the student, regardless of his course, a well-rounded education. To give him, in effect, that education he would miss as a result of practical experience. Courses were lengthened to obtain more practical work and officer courses were instituted as an interim postwar measure. In the fall of 1945 plans were made to place The Armored School at the level of the other Special Service Schools of the Army. The Army plan for education included the establishment of an Officers' Basic Course and an Officers' Advanced Course. The first Officers' Advanced Course entered the School in January 1946. In September 1946 the Officers' Advanced Class No. 1 entered The Armored School for a thirty-seven-week course.

The emphasis now was on the training of the vastly increased Officer Corps, with the mission of giving them a well-rounded educational background long before they had reached the age of retirement. Meanwhile, classes in specialist subjects were still continuing, but with smaller enrollment.

By September 1947, The Armored School had reached the status of a full-fledged Special Service School and its curriculum, particularly for the Advanced Course, was the equivalent of that offered by the Command and General Staff College in prewar days.

The current organization of the School consists of the Commandant and Staff Section which functions in the dual role as the Staff of The Armored Center, under the Commandant, Major General William G. Livesay; the Academic Group, which comprises all of the instructional departments, the Student Battalion, the Training Literature, Reproduction, and Printing Plant, and Extension Course Department, which operates under the Assistant Commandant, Brigadier General Bruce C. Clarke; and the School Troops, which is now composed of Training Reserve Units under the command of Lieutenant Colonel W. H. G. Fuller.

As a result of the world-wide reputation of The Armored School, other branches and friendly foreign nations make use of its facilities. Marine officers and enlisted men take courses regularly. Officers from practically every South and Central American Nation have studied here, as have Philippine, Chinese, British, Canadian, Australian, and French officers, and enlisted men from the British, Canadian, and Philippine Armies. Members of military missions to the United States from many of the world's powers make frequent inspection trips to witness the School in operation.

In order to benefit from civilian know-how, the School employs a large number of civilian specialists in its various departments. Many of these specialists are former officers and enlisted men with the knowledge and experience obtained in actual combat. Small groups of officer and enlisted instructors take special instruction from time to time at industrial plants which manufacture guns and vehicles used by the Armored Force.

The Armored School still functions in a manner similar to that of civilian industry. Raw materials flow through the plant, are worked on by skilled technicians, and emerge as finished products. In The Armored School, the raw material is the untrained man. He moves through the various divisions and departments where the instructors are the skilled technicians, and where they impart detailed information and teach operations which the student will perform later in his organization somewhere in the Army. The student progresses from phase to phase and emerges with the basic training necessary to work at his specialty in the same manner as finished products roll off an assembly line in industrial production.

To mention over-all strength figures is but a small part of the large picture of the administration of The Armored School. It can best be described by stating that as of June 30, 1948, just short of 100,000 enlisted and officer students have been received, trained, graduated, and successfully handled and returned to their parent organizations.

The Academic Departments of The Armored School.

A brief description of the academic departments of The Armored School appears to be in order. We will start with the academic departments which existed in the middle of the peak load, 1942-43, and trace them to their present status.

CLERICAL DEPARTMENT. Far larger than any civilian business college, this department trained in eight weeks the clerks and administrative specialists of the armored force. Required to type at least 30 words per minute upon starting the course, students were given a brief review in typing, taught to write military letters, fill out records and reports, and keep military files. Special night typing classes for beginners were started in 1942, and were open to the School's assigned personnel. In the beginning, one officer and nine enlisted men formed the teaching staff. At the peak load, the department consisted of four officers, one warrant officer, thirty-six enlisted men, and four WACs, with a student body of 400. The Clerical Department was absorbed into the General Instruction Department in 1945, and now teaches only administration.

COMMUNICATION DEPARTMENT. Ranking with the Signal Corps School at Fort Monmouth, New Jersey, the Communication Department trains communication officers, radio repairmen, and enlisted communication chiefs. During its peak load period, this department trained communication officers in twelve weeks, radio operators in from nine to fourteen weeks, and radio repairmen in fourteen weeks. Personnel expanded from a beginning of fourteen officers and fifty-five enlisted men with 900 students in November 1940 to thirty officers and 257 enlisted men with 1800 students in 1943. The 1800 students consisted of 1500 Radio Operators, and 300 Radio Repairmen. Early in May 1943, the Communication Department graduated its 10,000th radio operator. Currently, the personnel of the Communication Department consists of eighteen officers, twenty-six enlisted men, and thirty-three civilians. The instruction here is not confined solely to communication specialists. The Officers' Basic, Officers' Advanced, and the Noncommissioned Officers' Classes each receive communication instruction to enable each student to be familiar with and to operate all of the radio sets found in the armored division.

WEAPONS DEPARTMENT. Weapons Department, originally called the Gunnery Department, started with five officers and twenty enlisted men. At the peak period, the Department numbered 73 officers, 2 warrant officers, and 317 enlisted men. During the peak period, some 300 students were always on hand. Officers were trained to be gunnery instructors in six weeks. In this Department, emphasis is on the actual firing of all Armored Cavalry weapons from the carbine through the 105mm Assault Gun. Early in 1943, the enlisted course was revised to concentrate on repair and maintenance in the field, and renamed The Armorer and Artillery Mechanics Course. Enlisted men were trained to be armorers and gun mechanics in four weeks. One course added in 1943 was a radio controlled airplane target course of three weeks' duration to teach repair and maintenance of the radio controlled airplane target used in antiaircraft artillery training. All students in the Officers' Basic, Officers' Advanced, Officers' Associate Courses, and the Noncommissioned Officers' Courses receive instruction in the Weapons Department to qualify them on all of the weapons used in Armored Cavalry.

AUTOMOTIVE DEPARTMENT. Largest Department of the School, this is the outgrowth and combination of the Wheeled Vehicle Department, the Motorcycle Department, and the Tank Department. The Motorcycle Department operated the largest motorcycle mechanics course in the United States until the advent of the ¼-ton truck in July 1943. At this time, the Motorcycle Department was absorbed into the Wheeled Vehicle Department. The Wheeled Vehicle Department was established to train motor officers and automotive mechanics. The courses included automotive maintenance officers' courses for officers of company grade, to train them to be maintenance officers of companies, battalions, and regiments, and enlisted mechanics' courses to train automotive mechanics to adjust, service, repair, diagnose troubles on, inspect, and maintain wheeled motor vehicles, including half-tracks. This Department in 1943 had as many as 1,560 students present at one time, with an overhead of 45 officers, 2 warrant officers and 275 enlisted men. In 1945 the Wheeled Vehicle Department was merged with the Tank Department to become the Automotive Department, The Armored School. The Tank Department had equipment alone valued at $7,000,000 with an overhead of 386 personnel teaching 1,440 students in three different courses. The courses taught were Tank Maintenance Officers, Light and Medium Tank Mechanics. In 1945, upon the absorption of the Wheeled Vehicle Department, the course for automotive mechanics was lengthened to twenty-one weeks in order to train the mechanics as both tank mechanics and wheeled vehicle mechanics. All of the basic and theoretical subjects common to the two types of mechanical training were contained in one phase. During the same period, the motorized track vehicles of the field artillery were added to the curriculum of The Armored School and mechanics from the Field Artillery sent to Fort Knox for their instruction.

THE COMMAND AND STAFF DEPARTMENT. The Command and Staff Department consists of what formerly were Tactics Department and the General Instruction Department. General Instruction Department was established at the beginning of the school year 1945 in order to consolidate all subjects which did not naturally fall under the heading of tactics, weapons, automotive, or communication. Generally speaking, this Department taught all of the branch immaterial subjects of all courses. One of the School's original Departments, Field Engineering, was absorbed into Tactics Department in June 1941, and transferred to the General Instruction Department in September 1945, and has been returned to the Command and Staff Department as a Division within the Department, effective June 1948. The Command and Staff Department carries the brunt of the work load for officer and noncommissioned officer classes with the mission of instructing qualifying officers as general staff officers, to include the division general staff, and to qualify officers as commanders, to include the Combat Command Commander. The Command and Staff Department functions with five divisions, namely, G-1, G-2, G-3, G-4, and the Field Engineering Divisions.

INSTRUCTOR TRAINING DEPARTMENT. February 6, 1942, the Instructor Training Department was established under the name of Teacher Trainer Department. It was responsible for instructing the school commissioned, enlisted, and civilian personnel in the methods and techniques of teaching. The original operating personnel consisted of one officer, ten enlisted men, three WACs, and eight civilian teacher trainers who had been drawn from civilian educational fields. This Department in 1945 was consolidated and placed under control of the General Instruction Department. At this time, it is functioning as a separate division directly under the office of the Assistant Commandant, and in addition to training the instructor personnel of The Armored School, this division trains the officers and the members of the Noncommissioned

Officers Class in the proper methods and techniques of teaching. A remedial reading section is in the process of being established which will function directly under the old Instructor Training Section; now called Research and Evaluation Section.

THE OFFICER CANDIDATE SCHOOL. The Officer Candidate School instructed outstanding enlisted men who had passed strict physical and mental tests. Over a seventeen weeks' period, they were trained for commissions as second lieutenants in Armored Cavalry. While attending Officer Candidate School, the candidates studied under the various academic departments of The Armored School. Established on May 12, 1941, the Officer Candidate School enrolled 250 men in its first class on July 1. Since then the classes have increased or decreased to keep pace with the need for new officers as the Armored Force expanded. During 1942, approximately 450 new second lieutenants were graduated every three weeks. Late in December of that year, production was stepped up so that a class was graduated every week. Later on, when the need for new officers had slackened, weekly graduations were continued, but the classes graduating were reduced in size. Approximately one third of each class was weeded out during the seventeen weeks' training so that only those able to meet the most rigid leadership requirements were commissioned. The last class graduated in Officer Candidate School in October 1946, and brought the total Officer Candidate School graduates to 12,220.

TRAINING LITERATURES AND REPRODUCTION DEPARTMENT. This Department contains the Reproduction Department, founded October 16, 1940, which consists of a complete field printing plant, capable of producing a wide variety of duplicating processes. The Reproduction Plant is staffed by artists, draftsmen, photographers, and printers. The equipment is capable of mimeograph, multilith, linotype, letter-press and off-set printing, blueprinting, silkscreen work, air brush, photostat, and other duplicating processes. This Department turns out a wide variety of visual aids in the form of charts, maps, schematic drawings, layouts, posters, and, in addition, prints special school texts and field manuals for the Department of the Army. Training Literature Department edits and prepares for printing field manuals, film strips, training film scenarios, instructional bulletins, tactical training aids, lesson plans, examinations, and all of the training literature demanded in a modern school such as The Armored School. Under the direct control of the Training Literature and Reproduction Department, we also find the Book Department, which consists of a Book Shop with the main store in the academic area and one branch in the main post area. The Book Department operates under a Book Department Officer who, in addition to running the Book Shop, supervises the School Library. The School Library maintains a collection of reference books, technical publications, and some few fictional works on hand, but is in the main, a military library for the use of the students and instructors of The Armored School.

THE EXTENSION COURSE DEPARTMENT. This Department is charged with the administration of the nonresident instruction for all armored officers of the civilian components and regular army officers who enroll in armored extension courses. Student enrollments are accepted here; the lessons are mailed to the various students, who return examinations to this Department for scoring and posting. All of the records pertaining to armored extension courses are maintained in this Department.

These various departments are controlled and coordinated by the office of the Assistant Commandant, under the command of Brigadier General Bruce C. Clarke, who in turn is directly responsible to the Commandant for all instruction within The Armored School. The Assistant Commandant has as his staff a Director of Instruction, who is charged with the coordination of the academic instruction with existing directives and doctrine; an Operations Section which schedules all classrooms, student transportation, requirements for training areas, lunches, ammunition, and demonstrations pertaining to academic instruction; and an Academic Records Section which maintains the academic standing and results of examinations for all students in The Armored School.

Having come into existence in World War II, The Armored School is new and modern in every respect. The instructors are young and enthusiastic. The guiding commanders are of broad experience in all military phases. All of the examples and problems are modern. Tradition is still in the making, and The Armored School is taking its place on an equal rank with our Armed Forces Special Service Schools.

The Armored School has commenced publication of a Newsletter for the purpose of keeping armored cavalry officers and commanders and instructors informed of armored trends and abreast of the latest doctrine and techniques. The Letter will carry a Restricted classification and will appear biannually—in January and July. Within the limits of the classification the content will embrace current status of development, published changes in doctrine, revision of field manuals and correspondence courses, and brief resumes of current armored activities. This Newsletter is a valuable paper for active and inactive officers. We direct your attention to it.

THE ARMORED CAVALRY LEADERSHIP TESTS

TWENTY years ago a distinguished citizen with a sincere interest in the welfare of his country's military placed in trust a $35,000 fund, with the specification that the yearly income from the fund (which amounts to approximately $1,000) should be expended in the promotion and development of leadership in small cavalry units.

Under the direction of the Chief of Cavalry, suitable tests were formulated. Supervised by a three-member council normally including the Chief of Cavalry and the Commandant of the Cavalry School, a series of annual competitions was begun in which prizes and a trophy were awarded to the cavalry platoon obtaining the highest rating. These tests were conducted regularly from 1928 to 1941.

The war brought a suspension of the tests and a consequent accumulation of funds. This sum was turned over in June of 1946 to the Commanding General of the Army Ground Forces. It was supplemented by a portion of the fund held by the U. S. Cavalry Association. Within the same month a council was appointed composed of Major General Clarence R. Huebner, Major General John W. Leonard and Major General I. D. White. In September of 1946 this council met to discusse the continuance of the tests, and forwarded recommendations which were implemented in General Devers' letter to the Commanding Generals of all Armies in October of 1946.

On the last day of October in 1946, and at the request of the donor that his name not be used in connection with publicity, the name of the original Trophy Test was changed to The Armored Cavalry Leadership Tests. A new council was appointed for the year 1947, including Generals Leonard, White and Devine, and the tests were resumed among the Armored Cavalry units. The following units were awarded prizes:

First Platoon, Troop F, 43rd Cavalry Reconnaissance Squadron, 3rd Cavalry Group.

First Platoon, Company A, 66th Tank Battalion, Second Armored Division.

Reconnaissance Platoon, 41st Armored Infantry Battalion, Second Armored Division.

Recommendations for the year 1948 have recently been presented to and approved by General Devers. They include the availability to the Commander-in-Chief, European Command, of $1,500 to be used for the promotion of combat leadership in the Constabulary. Within the ZI the Commanding General of The Armored Center will select students with outstanding qualities of leadership on the basis of one each from a Noncommissioned Officers' Course, a Basic Officers' Course and an Advanced Officers' Course, with the respective prizes not to exceed $50.00 in value.

The lack of provision for the award of prizes to ZI units is based on the fact that the 1947 awards were granted there, and there is a certain difficulty and impracticability in testing ZI units. There was also the desire to obtain an equitable distribution by the inclusion of overseas units. The awards to the outstanding NCO's and officers at the Armored School have been scheduled as one of the best means of carrying out the primary intention of the indenture of trust—to promote combat leadership.

It is expected that an order will soon be published designating a new council whose members probably will be Major General W. L. Weible of Army Field Forces Headquarters, Major General William G. Livesay of The Armored Center and Major General John T. Lewis of The Ground General Center.

As we go to press we have news of the following 1948 awards, covering the three Armored Center Courses:

First Sergeant Simon M. Purvis, 57th Cav Rcn Tr (M)

First Lieutenant Albert L. Ramsey, Jr.

Lieutenant Colonel Frederic W. Boye, Jr.

The New *Look* In Training

by Brigadier General Josef R. Sheetz

The spotlight has been on our Universal Military Training experiment at Fort Knox. Civilian and military interest has been high. Here is the story by the UMT Experimental Unit's Commanding General.

AS the name implies, the Universal Military Training Experimental Unit at Fort Knox is an organization engaged in devising the best possible kind of training for teen-age youths in a peacetime military training program.

In late June, President Truman signed the first peacetime draft legislation which this country has had. Within a matter of weeks the draft machinery will go into operation. A substantial number of eighteen-year-old youths will fit the one-year training phase, while several hundred thousand men in the 19- to 25-year-age bracket will be available within the first year for the 21-month program. The important experience acquired in the Experimental Unit will pay off as the new draft program gets under way. Whether or not Congress had passed military training legislation, we have in the Experimental Unit an Army procedure for the training of young Americans that is successful, and which we must not fail to use.

The idea that we repeatedly try to get across to military and civilian visitors alike is that we are conducting an experiment in human relations—an experiment in which we have been learning how to handle young men so as to make them outstanding soldiers and outstanding citizens. It is working!

Brigadier General Josef R. Sheetz began his military career as an enlisted man in the Maryland National Guard. During World War I he served in France with the 3d Field Artillery. He was commissioned in 1917, and is a graduate of Field Artillery School Courses, the Command and General Staff School and the Army War College. He has also served as instructor in the FAS and C&GSS, and at Princeton College.

During World War II General Sheetz served as American member of the British General Staff, and commanded the 24th Corps Artillery during the Marianas, Leyte and Okinawa actions. He served as Deputy Military Governor of Korea and as G-2 and G-3 of Fourth Army prior to assuming command of the UMT Experimental Unit.

We are setting the pace in developing a "new look" in the Army. We have been pretty successful. So successful, in fact, that the entire Army is applying our methods insofar as they can to the Army as a whole. A recent report published by Major General Ray T. Maddocks, former Commanding General of the 3d Armored Division (Training) and now a member of the General Staff, Department of the Army, said:

"Much has been spoken and written about the methods, procedures, and policies of the Universal Military Training Experimental Unit at Fort Knox, Kentucky. Critics scoff at the marvelous results obtained by this unit, maintaining that they are dependent on carefully selected administrative and trainer cadre and trainees, on a ratio of cadre to trainees of one to one, and on funds and facilities not normally available to a Regular Army unit. The fact is, however, the 3d Armored Division (Training) has been utilizing generally the same methods, procedures, and policies and accomplishing roughly the same results as the Universal Military Training Experimental Unit. This has been done with normal administrative and trainer cadre and trainees, a normal ratio of cadre to trainees of approximately one to three point three, and the usual funds and facilities available to a Regular Army unit in a World War II cantonment area."

Thus, the accomplishments we have made in the Experimental Unit are proving themselves practical for adaptation throughout the Army. The things we have been doing for the past 18 months may very likely be a pattern which you and your sons will be following in the not-too-distant future.

Well, you ask, just what have you been doing in the Fort Knox Experiment? Here is the story.

Mission

The idea of an Experimental Unit for UMT was born in the fall of 1946 when preparations were being made to present to the 80th Congress the Department of the Army's plan for Universal Military Training. The purpose of the unit is twofold:

First, it has been designed to test the Department of the Army program for training the youth of the Nation.

to find and correct any deficiencies in applying our present methods to teen-agers; and to perfect the whole plan for use in any peacetime military training program made law by Congress.

The second purpose has been to present a picture of what UMT will mean; to materialize a small section of the program so that interested people can see it in action. This unit has been, in effect, a training aid in the task of demonstrating to the mass of the American people that UMT, as contemplated by the Department of the Army, would be beneficial to the average American boy. Here critics have been able to come and prove or disprove their criticisms. With a section of UMT materialized on the ground, nebulous generalities give way to specific comments. We have been able to get the discussion on the value of teen-age training out of the realm of hypothesis and bring it into the world of practical reality.

MILITARY TRAINING

So far as the military part of the training is concerned, the Experimental Unit is trying few innovations. The methods developed during the past war years have proved their adequacy and depend only upon skilled and conscientious instructors for success. The first eleven weeks are devoted to basic training. The object of this training, as in all basic training, is to make good basic soldiers, men who are disciplined and loyal, men with pride in themselves and in their unit, men with a sense of responsibility to themselves and to their comrades, men who are alert mentally and physically, and men who know how to take care of themselves under all circumstances.

The next eleven weeks are devoted to branch training with the object of making good privates in the particular branch for which the individual is being trained. The UMT Experimental Unit has one Company of Armored Cavalry. In the Armored Cavalry, for example, the trainee will be capable of performing well all the duties of a basic Armored Cavalry Soldier.

Development of initiative—a "lance" corporal inspects.

The Armored Cavalry branch training includes: Driving and Maintenance, Crew Drill, Field Expedients, Tank Gunnery, .45 caliber SMG, .30 caliber LMG, 50 caliber MG, 81mm Mortar, Communications, Organization of Armored Cavalry Units, Air Transportability, Defense against Biological Warfare, Defense against Atomic Attack, and Tactical Training in Tank Section, Tank Platoon, Tank Company, Reconnaissance Section, and Reconnaissance Platoon.

We have eliminated one type of training from our program, a type that came into use for the first time in the last war and has never been part of our peacetime training. I refer to those drills and exercises that are designed to instill hatred of the enemy and a desire to kill in the heart of the trainee.

Such drills were of doubtful value even in wartime and certainly have no place in teen-age training. Reports of such drills in the press are the source of many of the objections to UMT and other peacetime training programs. Parents feel that such drills teach the boys to murder, and they oppose exposing their sons to such doctrines.

With this single exception our training schedule is standard. It was prepared by branch experts in AFF Headquarters. We sent staff representatives to all Army Schools to be sure that our methods were up to date, our training aids the best obtainable, our schedules in keeping with school policy, and our equipment the best so far developed.

Let me remind you at this point that this is not the old-line Regular Army; this is UMT, or a similar peacetime program for the nation's youth. The object of this training is not to prepare for immediate battle; it is to develop the potential strength of the nation so that there will not be another war. It is to turn out well-trained and well-disciplined basic soldiers to fill the ranks of the National Guard and the Organized Reserves; to send young men to ROTC who are already well-grounded in the basic military virtues; to teach obedience, a sense of responsibility, and loyalty to the young men of the nation so that any future emergency will find a trained and disciplined citizenry ready to meet it.

We have had two advantages at our Unit which no military commander has ever had before: Our trainees are all the same age, all 17 or 18 years old; and they are all here for six months of uninterrupted military training. These two advantages are of tremendous importance, and our program is designed to make the most of them. We can make a plan for six months and know that we can carry it out. With all our trainees of the same age group we can adapt our tried and true training methods to the needs of that age group.

During the terrific stress of expansion in the war years some bad practices crept into military training. The necessity for speed, the lack of instructors, the huge numbers involved, all made proper training very difficult indeed. When some men who had never learned discipline themselves undertook to teach discipline to others, the results were not all that might have been desired. Since the opportunity offered, we made the attempt to eliminate the bad practices, to get away from the idea of the tough sergeant and the dumb recruit, and to substitute for it a better attitude, a sounder relationship.

Remember, we are dealing with boys. We must treat them like men because they expect to be so treated, but we must never forget that they are boys, and will react like boys—most annoyingly at times. If this idea is in the back of our minds, we will automatically be more patient and more tolerant, more inclined to put correction ahead of punishment, and advice ahead of bawling out.

The young men in our Unit are a typical group of young Americans. As nearly as practicable they represent what we can expect to get under UMT or any other type of teen-age training. The average age at the beginning of training has been about 17½ years. None have any previous military service except a week or two at induction stations. Nearly all states in the Union are represented. During two cycles the average education was slightly above the national average and the AGCT score was considerably above the Army average. In the third cycle the educational level was below the national average. We have been gratified to find that the trainees in the third cycle have been even more appreciative of their opportunities to learn in the Unit, and even more eager to become good soldiers.

With these groups we set out to demonstrate to the skeptical that the Army knows how to train young men.

Leadership

In the military lexicon the most important words are leadership and discipline. Between them they comprise a large percentage of the military virtues. If we are to handle the youth of the nation successfully, we must understand the meaning of those two words. There is nothing new in what I say on this subject. Every idea here has been said before many times, but it needs to be expressed again—not for everyone, it is true, but for those who have never learned or have forgotten what true leadership and true discipline mean.

These two words are almost inseparable; they interlock and overlap, and it is almost impossible to speak of one without the other. Good leadership produces good discipline, and one is never found without the other.

When I speak of leadership I am not thinking in terms of Alexander the Great and Napoleon, or Eisenhower and MacArthur. I am thinking of leadership at the lower level, the company commander, the platoon commander, and above all, the platoon sergeant. The platoon sergeant is the man most intimately associated with trainees; he is the man who exerts the greatest influence on them and he is the man consequently, whose attitude must be correct from the beginning.

I am fully aware that leadership comes from the top, but I am also aware that the top must exert sufficient pressure to see that the principles of good leadership go all the way to the bottom.

Instructor-student relationship has replaced the old tough sergeant-dumb recruit idea.

Leadership is a question of human relations, and the only sound approach is the psychological approach. Leadership is based on an understanding of human nature, on the ability to see and to appreciate the other fellow's point of view. Only so can we inspire in subordinates the desire to carry out commands. The achievement of such leadership was the first object considered when this unit was in the throes of organization. As a basis for establishing the proper attitude, these fundamental principles—which are really lessons in elementary psychology—were hammered home to the instructors in this manner:

First: this is peacetime training, and you are dealing with 18-year-old American youth. If you are to be successful you must have faith in what you are doing. You must believe that the average 18-year-old American boy is essentially good; that he wants to do well; that he wants to be well thought of by his associates and by his superiors; that he is at least a little bit ambitious and wants to get ahead and if he gets the proper guidance and the proper leadership he will do his best to be a success in the unit. This statement is the basis of everything we do. It *must* be accepted by the instructor, and *must* determine his attitude and his manner of handling trainees.

Second: If a recruit does something wrong, tell him how to do it right instead of cussing him out for doing it wrong. That statement appears too simple to need saying, but nevertheless it means a complete reversal in attitude for some people. If the platoon sergeant remembers that he is dealing with boys and if he believes these boys are sound at heart, he will have little trouble in adapting himself to this principle.

The idea of making corrections must be applied not only to military training but also to every phase of behavior and human relations. The cadreman, without hesitation, must tell a trainee anything that he should know but doesn't. Tell him to wash his hands and face in the morning; tell him not to comb his hair in the snack bar or clean his fingernails at the table; teach him some elementary table manners; tell him how to behave on the bus, in the theater, or in town, and so on. Much of the bad behavior of teen-age boys in public is a result of carelessness and we must make it our business to go as far as we can to eliminate carelessness. The cadreman must correct every fault when he sees it—but he does not have to be nasty when doing it.

It must be impressed upon the Sergeant that he is an instructor, and the proper relationship between him and the recruit is the instructor-student relationship. The mere substitution of words puts the Sergeant on a higher level, gives him more dignity, and increases his own self-respect. But the Sergeant must never be easy with his men. He must be as strict as he is capable of being; but he must never be personal in applying corrections. He must be impersonal and objective.

In the instructor-student relationship there is no place for swearing or any kind of bad language. Instructors do not swear at students, although for some strange reason Sergeants are supposed to swear at recruits. The total elimination of swearing is probably impossible, but the prohibition against it in the instructor-student relationship must be enforced. One of our main objects is to develop in the trainee a sense of self-respect and personal pride. Swearing or unduly harsh language by the instructor makes the accomplishment of this object impossible; in fact, it diminishes the very characteristics we are trying to build up. Furthermore, swearing diminishes the prestige of the instructor, it lowers him in the minds of the trainees, and it does not lend emphasis to the instruction being given.

We use many more of these simple lessons in human relations, all designed to achieve a better attitude on the part of both instructors and trainees, all designed to improve the standard of leadership and to adapt training methods to the needs of teen-age boys. You must remember that the trainees are just average boys; some of them have had few opportunities. Sometimes they are recalcitrant and rebellious, but for the most part they will respond to proper handling. Some of them, of course, are bad and must be treated accordingly. One of the hardest lessons to teach the instructors is not to let the bad actions of the few embitter them against the rest or diminish their belief that the average American lad is sound at heart.

DISCIPLINE

Discipline is an unpleasant word to the average civilian because it suggests punishment, the iron hand of regimentation. Such an idea, of course, is wrong. Discipline means obedience—willing, cooperative obedience—to lawful authority. We set out to prove we could produce well-trained and well-disciplined soldiers without suppressing their individuality, diminishing their self-respect, or hindering their personality development. We said we would teach them discipline, build their characters, give them confidence, increase their self-respect, and make them better citizens while also making them good soldiers. The proof is here at Fort Knox.

We will unhesitatingly compare our disciplinary record with that of any other unit. We will go further and claim that the language in our barracks, the manners in our mess halls, our venereal rate, will compare favorably with that of any college freshman class. Behavior is the real test of discipline.

We teach discipline the way it has always been taught: by precision drills; by insistence on exact carrying out of all orders; by rigid adherence to all published regulations; by demanding punctuality, smartness, neatness; by parades and ceremonies; by correcting every deficiency at the time it occurs. Our instructors are just as strict and just as severe as they are capable of being; there is nothing soft about the training nor should there be. We must have discipline, good discipline, and there is no better way to obtain it. However, and this is of fundamental importance, discipline does not involve tyranny or regimentation.

DEMERIT SYSTEM

It was to aid in achieving this type of discipline that we included a demerit system in the Unit. The object was simply to eliminate the apparent necessity for vocal punishment for minor delinquencies. The chief advantage of the Demerit System is that it provides the platoon sergeant with a simple, effective, and dignified means of punishment for small transgressions, and automatically keeps the relations between the sergeant and the recruit on a higher level.

TRAINEE COURT

The demerit system, of course, applies only to minor delinquencies. For those other offenses which involve something more than mere carelessness or forgetfulness, we have what we call a Trainee Court. Before this Court are tried offenses which in any way reflect discredit upon the company. I am not speaking of crimes, but rather of such offenses as shirking, AWOL for a few hours, any neglect of duty, disorderliness or offensive behavior; in general, the kind of actions that decent people resent. These offenses are tried by a court made up of seven trainees.

The Company Commander sits on the court without vote. His primary purpose is to preserve order and rule on questions of law and procedure. In order to insure fairness and an impartial jury, trainees of the court are chosen from a company other than that of the accused. The accused's company commander is the officer without vote on the court. The Trial Judge Advocate as well as the Defense Counsel are both trainees.

The purpose of the Trainee Court is to make the offender feel that he has offended not the company commander, but the community itself, and to make him feel responsible to the community for his behavior. At the same time the company must be made to feel responsible for the actions of its members. The Trainee Court is really an experiment in self-government with the object of developing in the individual trainee a sense of responsibility. If you remember President Truman's press release when he appointed the Advisory Commission on UMT, it was a "sense of responsibility" that he particularly emphasized as a quality much to be desired in the younger generation. We have taken positive steps to develop such a quality in our trainees.

INFORMATION AND EDUCATION

So far I have discussed military training almost exclusively, pointing out the minor modifications we have made in standard practice to meet the needs of the young soldiers with whom we are working. There are other things to make a good soldier, however, besides strictly military training, and we realized the off-duty hours of these boys were just as much our concern as the on-duty hours. How to put these hours to good use is a much more difficult problem than planning a military training schedule. Young men need positive values in recreation, occupation, and personal interests. If no one bothers to provide these things, misbehavior will result. In order to encourage interest in education we do a number of things. At the beginning of each cycle we make an educational survey of all the trainees to determine their accomplishments and to discover their interests. We have made our school building the most attractive building in the area. We hold conferences on the opportunities available. The courses we offer are the usual USAFI courses and what vocational courses we can find teachers and facilities for. It is our aim to provide educational opportunities to any trainee with the mental and physical ambition to take advantage of them. We do our best to make educational facilities attractive and to stimulate the dullard to participate. At first our educational program was voluntary. As was to be expected, we encountered the difficulties that all night schools encounter. It takes an ambitious man to put in a couple of hours of voluntary education after eight full hours of compulsory military education. Then, too, of course, we always had the inevitable guard and KP to interfere with regular attendance. So we soon changed to a compulsory program of four hours per week.

All trainees take two subjects of two hours' duration each, on Saturday morning, electives within limits. The intellectually ambitious take two academic subjects; the others take vocational courses. Academic courses are limited only by the USAFI catalog; vocational courses by instructors and facilities available. We have regular classes in the more popular subjects: English, History, Psychology, Bookkeeping, Typewriting, Shorthand, Auto Mechanics, Radio, Physical Education, Vocal and Instrumental Music. Other students are formed into study groups. All, however, have expert help at hand. We teach, too, most of the common manual arts in our hobby shop. Our instructors are largely civilians, augmented by what talent we can find in our own headquarters.

The new approach is beyond question superior to the purely voluntary program followed in the first training cycle. Of course, there are some boys interested in nothing. Our constant aim, however, has been to give to every trainee some active interest in a vocational or academic field. We have tried to get away from passive recreation and substitute active participation. Maybe, if the lad who doesn't want to study can be made to develop a manual skill, he will go to the hobby shop occasionally instead of the movies.

Our educational counseling has always been a bright spot in our I & E program. By surveying the trainees, by almost innumerable individual conferences, we have accomplished a great deal. I can honestly say that the time devoted increased rather than diminished the interest of trainees in education. We do our best to fan the flame of educational ambition everywhere we find it, but lighting the spark in the first place is sometimes difficult. Many of our men have responded to the extent that they have worked hard for and have been awarded High School Diplomas while in our Unit.

PLACE OF THE CHAPLAIN

There is a third part to our program which is something of an innovation in military training. When Dr. Karl T. Compton was appointed chairman of the President's Advisory Commission on UMT he made a statement to the press to the effect that the security of the country depends not only upon military preparedness, but also upon the physical, mental, spiritual, and moral fibre of the youth of the nation.

We heartily subscribe to that statement of principle. It underlies our whole program. From the beginning we were determined to do our best to turn out well-rounded young men, to include moral training in our schedule, and by some means to put increased emphasis upon spiritual guidance. Determining the precise steps to accomplish these ends was not simple, but we believe we have the solution.

The chaplain interviews each trainee shortly after his arrival, talks to him, breaks down the barrier that so often exists between the Chaplain and the soldier. During the course of the interview the chaplain makes out a card which is, in effect, a religious profile of the trainee, which is kept as a permanent record. These interviews have been a revelation. They supported our original assumption, that the average 18-year-old is not a cynic on matters of religion. As a result of those interviews 420 Protestants and 112 Catholics have voluntarily spent considerable part of their off-duty time receiving religious instruction from the chaplains. Some fell by the wayside, of course, for a variety of reasons. But our Catholic Chaplain has had 49 boys confirmed although 22 of those had to be baptized and 41 had to make their first communion before becoming eligible for confirmation. Our Protestant Chaplain, with the assistance of other chaplains on the Post and Louisville ministers, has helped 152 trainees complete the ecclesiastical requirements for joining the church of their choice.

Our chaplains are regular members of our faculty.

They conduct classes in citizenship each week. At these talks emphasis is placed on the duties and obligations of the citizen rather than upon his rights and privileges. Such duties and obligations are basically moral and fall within the realm of the chaplain.

Our social hygiene program, too, is in the hands of the chaplains. Here we consider personal morality as the only sound basis for combating venereal disease and, therefore, the emphasis throughout training is on continence and high moral standards. We do not stress penicillin, we stress morality as the answer in combating venereal disease.

BEHAVIOR

Throughout our training program we have endeavored in many ways to raise the general tone or cultural level of the unit. For this reason there is no beer in our Post Exchange. The Post Exchange is a club, a drugstore, rather than a beer tavern. We continuously strive to eliminate the vile and offensive language too often heard in barracks. We serve family style in our mess halls, allowing no one to begin a meal until all are ready, and insisting upon the observance of at least the fundamentals of good table manners. For this reason, also, we exercise close control over our social functions to insure that the customs of normal social behavior are understood by all.

In conjunction with our athletic program we endeavor to indoctrinate our men with the standards of good sportsmanship; not an easy task these days. In connection with passes we give instruction on proper behavior in busses, in town, in private homes and in public.

In all these things we are carrying out the basic attitude I described in the first place: namely, that the average American lad will do the right thing if he knows what it is and if the standards of his group are maintained at a high level. Much bad behavior springs from ignorance and the hostile defensive reaction which results from harsh or unsympathetic correction. It is easier to prevent bad behavior than to correct it.

One of the chief reasons for restricting the trainees to the battalion area for the first month is to give the instructors the opportunity to teach the fundamentals of common courtesy as well as military courtesy before the trainees come in contact with outsiders.

At the end of the first month, they are permited weekend passes on the same conditions as other soldiers. While we discourage overnight visits to near-by towns by having our own principal social activities on Saturday and Sunday, we do not try to prevent them. Every bartender and package store clerk in Louisville knows that wearers of the UMT patch are minors and may not be sold intoxicants of any kind, not even beer, under penalty of the law. Civic authorities of Louisville have been most cooperative in helping us keep an eye on these young men while they are in town and in enforcing the Kentucky Liquor Law, at least where trainees are concerned.

CIVILIAN ADVISORY COMMITTEE

We have a Civilian Advisory Committee, made up of representative citizens of Louisville and Elizabethtown. The committee was appointed by former Governor Willis of Kentucky in cooperation with the late Mayor Taylor of Louisville. It includes subcommittees on health, religion, education, physical training, self-government, entertainment, and a parents' committee interested in the general well-being of the trainees.

This advisory committee has been very much interested in what we are doing, and its members have rendered services beyond price. They have given us the civilian viewpoint on our program and have provided an example of cooperation between the civilian and the military which should set the standard for all communities in a national UMT program, or teen-age selective service.

SUMMARY

This, then, is the outline of what we are trying to do at Fort Knox. Our primary mission is to turn out well-trained and well-disciplined soldiers. Military training is the reason for our existence, and we carry out a full program honestly. Press stories sometimes neglect training aspects because they have little news value; reporters prefer to publicize extracurricular activities because those features have greater reader interest. This frequently gives a distorted picture of the unit. Our trainees are trained as hard and conscientiously as any soldiers anywhere. They have never been coddled. On the contrary, the regime here is as strict as that in any military organization, the hours as long, the work as arduous, and the fatigue and guard as inevitable. There has never been any doubt in my mind as to our mission. If we fail to instill true discipline in our trainees, if we fail to develop and teach concepts of leadership suited to 18-year-old American boys, if we fail to instill in them a sense of self-respect and personal responsibility, and an understanding of their duties and obligations, we will never succeed no matter how complete our hobby shops or how comprehensive our educational opportunities. If we do not develop good morale and a spirit of cooperation in the troops; in a word, if we do not make them good soldiers first, all the elaborate structure of extracurricular activities will collapse like a house of cards.

Unfortunately, the results of our program can be judged only at Fort Knox. But the proof is here, ready for inspection. We encourage our visitors to talk to trainees, to talk to our platoon sergeants, to drop in at our mess halls, our Post Exchange, our Service Club, and to see for themselves the results of what we are doing. The real test of our methods is the morale of the battalion, the enthusiasm with which the men do their work, and particularly the attitude between the trainees and their instructors. These boys are not angels, and we have our share of malcontents. You can find trouble if you look for it, but you will have to look.

THE COMMANDING GENERAL OF OUR FAMOUS "HELL ON WHEELS" DIVISION GIVES US A REPORT ON PEACETIME ACTIVITIES

The Second Armored Division In Peace

by Major General James G. Christiansen

IN 1939 and 1940 the world military experts focused their attention on the "Blitzkrieg" tactics of the powerful Panzer units of the German Army. In the United States, advocates of mechanized warfare and Armor, such names as Chaffee, Devers, Patton, Crittenberger, Gillem, Henry and others, were given their opportunity to produce.

The first large armored units for our army were provided when two Armored Divisions were authorized and one of these, the Second Armored Division, was activated at Ft. Benning, Georgia, on 15 July 1940. Later other Armored Divisions were formed until a total of sixteen was reached.

Today, after eight years and one war, the Second Armored Division remains the only Regular Armored Division in the U. S. Army. It saw action on the beaches of North Africa and Sicily, then went into Normandy close upon the heels of our invading infantrymen to blaze its name across France, and into Belgium where elements of its Reconnaissance Battalion were the first Allied Troops to cross the border, later going into Holland and Germany.

Breaching the Siegfried Line, helping to reduce the Bulge, and participating in many other battles were but part of the day's work to the fighting men of the Second Armored, known by this time much better by its nickname "Hell on Wheels," bestowed upon it early in its training career by a beloved commander, General George S. Patton, Jr.

It was this vaunted "Hell on Wheels" Division which became the first American unit to move into Berlin, later to be relieved by the also famous 82d Airborne Division.

Today this remnant of a once large and powerful Armored Force is stationed at Camp Hood, Texas where it has settled down to its postwar training role. Combat Command "A," its only active element at present, is commanded by Brigadier General John H. Collier, who joined the Division as a Tank Battalion Commander early in 1941 and has remained with the Division, except for a few weeks in 1946, until the present time. He is one of the few old-timers left in the Division who can recall the hectic training days, weeks and months of 1941 and 1942 prior to the time the Division sailed for North Africa in 1942.

Major General James G. Christiansen was graduated from the U. S. Military Academy's Class of 1918 as a Second Lieutenant in the Corps of Engineers. His assignments between the wars included a two-year tour with the Alaska Road Commission and a period as instructor in Military History at West Point.

General Christiansen is a graduate of the Engineer School Courses, the Command and General Staff College and the Army War College. During the war he served successively as Chief of Staff of Army Ground Forces and of the Philippines-Ryukyus Command. He is now Commanding General of the Second Armored Division.

Few are the members of the Division who remained with it throughout its complete existence. Some of them are Captain George M. Warren, presently its Assistant Adjutant General, WOJG Onie O. Ledbetter, First Sergeant George Murphy and a small handful of others.

The postwar training of the Division follows the broad, well-rounded training prescribed by Army Field Force directives. Since its return to the United States the Division, or elements of it, have taken part in Task Force Frost, Task Force Frigid, Exercise Seminole, Exercise Mesquite and special air transportability training for Armored Units. All of these are in addition to the normal training of an Armored Division in reconnaissance, tactics, gunnery, maintenance, and small scale maneuvers at Camp Hood.

Camp Hood, located in the central part of Texas and consisting of approximately 155,000 acres, is considered one of the best, if not the best, of the training areas under the jurisdiction of the Army. It has a varied terrain which is slightly rolling in some portions, with quite rugged low hills, thick with underbrush, in others. The training facilities on the reservation in the way of ranges are certainly equal to the best in the country. All in all, it is an ideal place for an Armored Division to train.

It must be noted that only small detachments of the Division participated with Task Forces Frost and Frigid. Exercise Seminole, which was a full scale landing operation of an armored combat command in a combined operation with the Navy and the Air Force, found Combat Command "A" of the Division, reinforced by Army and Service Troops, marching by rail and motor to San Jacinto Ordnance Depot, embarking in APA's, AKA's, LST's, LCT's and landing on a beachhead established by an assumed Infantry Division on the Florida coast. Its mission was to destroy and expel from our shores an AGGRESSOR force which had made an attack on the country.

Seminole was a training exercise rather than a maneuver, although some maneuver situations were brought into the exercise to give the staffs of the Division and Combat Command experience in the field.

The technique of loading and landing armored vehicles from landing craft was practiced at Camp Hood for weeks in mock-ups under the supervision of a transport training unit of the Marine Corps.

During Seminole, men of the Division saw and operated against AGGRESSOR for the first time. As a result of the use of AGGRESSOR troops and equipment, Seminole had an aura of reality for the intelligence phase of the training, for naval gunfire operations, and for fighter-bomber and photo reconnaissance work by the 12th Air Force.

On the return from Seminole to Camp Hood the Division made an overland tactical march from San Jacinto Arsenal, where they debarked. In this march all vehicles of the Division traveled in one column over main and secondary roads of Texas for a total road distance of over 250 miles, which was easily covered in three days. B Company of the 17th Armored Engineer Battalion and the attached 988th Engineer Treadway Bridge Company strengthened dozens of small bridges, made innumerable by-passes around weak culverts and assisted the Combat Command in making five river crossings. The 12th Air Force with their Jet P-80 fighters furnished column cover for this march.

As soon as Seminole was over and before the maintenance work was completed on the vehicles of the Division after the 250-mile march, plans were under way for air transportability training for the 41st Armored Infantry Battalion. This training was carried out in three phases. The first phase was the ground training. This was done on the ground at Camp Hood. Using a fuselage of a salvaged C-47 and mock-ups of the C-82, men and officers of the 41st were instructed in loading, stowage and lashing of air craft by a team of officers and men of the 82d Airborne Division.

The second phase of this training was actually the culmination of the first phase. Several C-82's of the Ninth Air Force landed at Camp Hood and the 41st actually loaded the planes with men, equipment and vehicles and were taken for a short ride in order that they could see the results of their training and get the feel of the air.

Starting on 9 March a five-day test was made of the effectiveness of their training. Again the huge cargo planes landed to be loaded, this time for a simulated combat mission. Once loaded the planes took off and landed the Armored Infantry over 500 miles away where the Armored Infantrymen unloaded and immediately went into simulated combat with an AGGRESSOR enemy.

Upon completing this mission they reloaded for another flight of several hundred miles and landed again to perfect their technique of unloading from the planes under simulated combat conditions. The training in air transportability of the 41st Armored Infantry was completed as they were landed at the airstrip at Camp Hood on March 14th.

Eventually, it is planned that all units of the Division will have air transportability training. But so far only the Armored Infantry Battalion has had the opportunity.

Exercise Mesquite was conceived and designed to train and perfect the men of the Division and the Jet-Fighter pilots in the technique of air-ground coordination between high-speed fighter-bombers and armored task forces. Planning was begun early in the year and final details were resolved at a conference in mid-April. On 6 May the first phase of Mesquite began.

Here again, the Second Armored Division made use of the Army's latest maneuver enemy, AGGRESSOR.

Assuming that AGGRESSOR had landed on the Gulf Coast of Texas and established a beachhead and that an AGGRESSOR armored task force had forced itself inland to the vicinity of Camp Hood, the Second Armored Division had been ordered to cut this task

The awful gap, reflecting on our prewar arrangements, was *the absence of even one armoured division in the British Expeditionary Force.*

Winston Churchill in *The Gathering Storm*

Courtesy Houghton Mifflin & Company Publishers.

force off from the beachhead and to destroy any AGGRESSOR which were thus isolated. The 12th Air Force would support the operation with a squadron of P-80 fighter bombers and a flight of FP-80 photo reconnaissance planes.

The task force having been cut off, Combat Command "A" was ordered to pursue the remnants of AGGRESSOR in the Camp Hood Area. P-80 reconnaissance planes equipped for photo or visual reconnaissance work began flying sorties to determine the whereabouts and strength of the AGGRESSOR elements. Fifty men and officers of one company of the Division using AGGRESSOR uniforms and dummy equipment began to build a picture on the ground which could be seen from the air. For four days this picture grew as enemy columns were shown moving into the area, defense installations were being constructed along a stream, artillery units were going into positions, mine fields were being laid and other forms of activity were depicted in order that the reconnaissance planes could build the whole picture for the ground and air commanders for their coordinated attack.

Combat Command "A" hits the beaches in Seminole.

Patrol activity began on the night of 9 May by AGGRESSOR elements against the bivouacs of the units of the Combat Command. By morning the intelligence picture of the AGGRESSOR situation had been made clearer by information obtained from interrogation of prisoners and captured overlays.

Then a series of coordinated attacks began against the AGGRESSOR positions. The actual men representing AGGRESSOR were cleared from the impact area of the reservation for each of these attacks, leaving dug-in tank hulls and guns as the targets to be used by the planes and tanks in their attacks.

This series of attacks was actually two separate maneuvers over the same general terrain area on four different days, varying the direction of attack in order to give the ground troops and the Air Force an opportunity to perfect the technique of coordination which is so vital between fighter-bomber cover for armor and the hard hitting tanks on the ground.

Realism and actual combat conditions were stressed at all times. 12th Air Force A-26's were used as AGGRESSOR planes and, during the actual attack phase of the problems, the tanks, artillery and infantry used live ammunition to mark targets while the Air Force used 100-lb. dummy bombs on selected missions. Tactical air control parties with the ground troops were used to control the planes and guide them onto the desired targets. Both the ground and air commanders were highly pleased with the results obtained by the time Mesquite was ended on 15 May.

Not everything the Second Armored Division has done since it has settled down at Camp Hood has been of a special training nature. Disaster teams of the Division were on hand to help in the Texas City holocaust. Other disaster teams have been sent to communities in the Fourth Army Area stricken by tornadoes.

The members of the 41st Armored Infantry Battalion believe themselves to be the "paradingest" battalion in the Army. They have paraded in New Orleans, Beaumont, San Antonio, Temple and various other places, for a total of ten parades in two years.

Each summer the Division digs into the problems involved in helping the ROTC, National Guard and ORC units which train at Camp Hood during summer months. This summer, this work will start on 30 May when 265 ORC personnel are scheduled to arrive as the first increment to have the 14-day training period. Other groups smaller or larger will continue to arrive at two-week intervals until the middle of September.

On 19 June too ROTC students will arrive for their annual six-week encampment and the Division will give them administrative support as well as conduct demonstrations for them throughout the period.

In August some 9,000 Texas National Guardsmen will arrive for their summer camp. Again the Division will give certain administrative support, assist in their training as requested and stage demonstrations for them.

All in all, the men of the Second Armored Division have had little time to be bored since the division returned to the States.

The Third Armored Training Division

by Major C. E. Dunlap, Jr.

Initial training of the soldier is the crucial period. From one of our quartet—soon to be an octet —of manpower sources for the Field Forces comes an account of the training program.

REACTIVATION

On July 15th, 1947 the 3d Armored Division was reactivated at Fort Knox, Kentucky and took over the functions of the Replacement Training Center located at that station, with a primary mission of giving individual training to about one fourth of the enlisted men entering the Army for the first time.

In keeping with its brilliant combat record the re-created 3d Armored is carrying on the mission of indoctrinating, orienting, and training enlistees for the Army with all the "verve and dash" which so distinguished it overseas. Outstanding for its "firsts": first to fire an American artillery shell on German soil; first to breach the Siegfried Line; a part of the first army to invade Germany from the west since Napoleon made his tortuous way to Moscow; first to capture a German town; first to down a German airplane over German soil, the 3d's mighty tradition is being carried on by an alert and conscientious group of officers and men on the site where armored troops have trained since 1940, when it was established as an Armored Replacement Center.

Today, however, the training is not armored but is designed to turn out an individually trained soldier capable of serving anywhere in the Army. At the completion of training the new soldiers are sent to all arms and services as directed by The Adjutant General. As an adjunct to the training program, in its administrative handling of the trainees the Division has incorporated several new departures, some of which are importations, adaptations, and improvisations of the better proven and tested features of the Universal Military Training Experimental Unit at Fort Knox, while others are of the Division's own devising. These features, plus the irresistible desire to carry on the "first" tradition, makes this a unique training organization.

Major General Roderick R. Allen graduated in 1915 from the Agricultural and Mechanical College of Texas with a Bachelor of Science Degree. He was commissioned a second lieutenant of Cavalry in November of 1916. During World War I he served in France with the Third Cavalry, and as an observer with the First Observation Squadron.

General Allen commanded the 12th Armored Division in Europe in the late war. In 1946 he received a Doctor of Laws Degree from the Agricultural and Mechanical College of Texas. He is now Commanding General of the Third Armored Training Division.

The reactivation of the 3d Armored Division stems from a decision by Department of the Army in 1947 to give to the then Replacement Training Centers the names of wartime divisions with outstanding combat records as a means of encouraging enlistments and building up morale and "esprit de corps" for both the new trainee and the training cadre. The RTC at Fort Knox was appropriately designated the 3d Armored Division (Training), the title of which brought along with it the many wartime honors and citations.

To enable the units to carry out their primary function as training organs, all administration, supply (including transportation) and coordination are centralized at Division level. Of necessity this required a top-heavy Division Headquarters, which is authorized 121 officers and warrant officers and 887 enlisted men, including a Band. The authorization for training units, which includes both trainer and administrative overhead, totals 392 officers and 1621 enlisted men. The authorized trainee load is 10,158 of which 2490 are Negro. The 3d Armored Group trains all of the Negro trainees except those who attend the Leaders' Course or receive specialist training.

THE TRAINING PERIOD

During his first week in the Division the trainee is received, indoctrinated, assigned to a training company, processed (to include testing, classifying and initiation of records), outfitted with clothing and equipment, oriented as to Division and Post facilities, and shaken down by pre-cycle training in the most basic subjects. The trainee starts his processing by passing through

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Major C. E. Dunlap, Jr., entered the service in early 1941, and was first assigned to an antiaircraft unit. He later served with the Replacement Training Center at Fort Knox and the Reception Center at Camp Atterbury, Indiana. He has been with the 3d Armored Division since 1947 as Assistant Chief of Staff, G-2.

the clothing warehouse where he receives all of his military clothing. Here he is measured, his clothing issued, and then to insure a perfect fit, all outer clothing is trial fitted. For those individuals who cannot be fitted with stock sizes, alterations are made to their measurements and then their uniforms are delivered to them at their company within forty-eight hours. With the preparation of the service record and all other allied records the second step in the processing cycle is completed. In keeping with the Army's Career Management Plan, a complete and comprehensive battery of tests is administered by trained personnel of the Classification Section to each individual who passes through the Division. These tests have been so designed by The Adjutant General that selectivity indicated by a certain test or group of tests forms the basis for prerequisites necessary in any specialized training the Army may give. The results of these tests in conjunction with the personal history interview enable Classification to place the man in a field of interest where he is most likely to succeed and be of most value to the Army. Included in the battery of tests given are the following:

Army General Classification Test
Army Radio Code Test
Electrical Information Test (given only to those with 90 or higher AGCT)
Army Preference Blank
Mechanical Aptitude Test
Shop Mechanics Test
Automotive Information Test
Clerical Speed Test
Radio Information Test (given only to those with 90 or higher on Electrical Information Test)
Motor Vehicle Operator's Physical Aptitude Test
Officer's Candidate Test (must have AGCT of 110 or higher)

The results of all of these tests are posted on the individual's WD AGO Form 20 and are therefore available during his tenure of service.

With his processing week over, the trainee is ready to start his training cycle. This is normally thirteen weeks of training, and although the cycle being used at the present time has been reduced to eight weeks this is only an expedient to take care of a particular situation, and as soon as this situation has become clarified the thirteen-week cycle will again be used. For this reason the thirteen-week cycle will be discussed, since the shorter program is accomplished by reducing the subjects taught and the hours assigned to some subjects, which remain in the eight-week Mobilization Training Program.

The Division is charged with seven separate types of training. They are: the thirteen-week training program for newly enlisted volunteers; the short refresher course for men with prior service in the Navy, Coast Guard and Public Health Service reenlisting from civilian life; the training of bandsmen for Army Bands; a special Leaders' Course for new enlistees who have completed their basic training or for reenlistees who so desire; the continued training of specialists to include mess stewards, cooks, clerks, typists, supply personnel and motor vehicle mechanics; the training of enlisted men and officers assigned to the Division as trainers; and the training of officer and enlisted reservists.

The thirteen-week program is designed to transform men that are new to the Army into basic soldiers. The training is basic to all branches, in that all subjects taught are common to all branches of the service. These subjects are directed toward training the individual. This type of instruction provides the Army with a basic soldier who has been properly oriented and can fit into any Army unit with a minimum of additional training. Instruction is conducted eight hours daily, Monday through Friday. One of the more important aspects of this training is that of physical conditioning. One hour daily is devoted to this subject with the objective of bettering the physical condition of every man and to make him a better soldier by having a well developed and coordinated body and mind. The training is progressive in that it begins with simple conditioning exercises and develops into more strenuous forms of physical exercises.

A series of lectures delivered by the Division chaplains cover the fundamental moral principles and basic obligations of a citizen. The importance of self-control and self-discipline, the worth of right conduct, clean living and its reward, and the obligation of the soldier to his home, his family, his church, and his country are stressed. One hour per week is incorporated into the Troop Information Program. Preceding each class, an up-to-the-minute news summary is given. These subjects are informational in nature and many are held as open forums or discussions. This enables the trainee to enter into discussions with his fellow soldiers on many topics. The over-all objective is to create a more responsive soldier through a mental attitude favorable to leadership and training. The Army believes that America's security lies in a well informed soldier.

Relative to the weapons of war, the trainee's basic weapon is the M-1. Sixty-eight hours of instruction in sighting and aiming exercises, care and cleaning and actual firing of the rifle are conducted. The trainee fires a qualification course and the records that are kept of the individual scores indicate that ninety per cent qualify with this rifle. The minimum standards of attainment, as prescribed by the Department of the Army, are that each man have a thorough knowledge of the mechanical functioning and operation. He must be able to assemble and disassemble the weapon. He is instructed how to eliminate simple stoppages and malfunctions. The new soldier is instructed in several other weapons including the light machine gun, grenades, and the rocket launcher, commonly called the "bazooka." Each man is taught how to use them and is given the opportunity to actually fire these weapons.

The balance of the training program consists of such subjects as first aid, signal communication, personal adjustment, guard duty, and individual tactical training such as map reading, compass work, night vision instruction, field fortifications, and scouting and patrolling.

In his twelfth week the trainee spends a full week in the field under field conditions. Throughout his training cycle he has gradually toughened and prepared for this week. The training runs along the following pattern: Upon receipt of the movement order, the battalion commander issues a warning order to all troops who are to participate in the week's activity. A reconnaissance is made of the area and the time, date and location are fixed. Normally the area is approximately sixteen miles from the Division area. The trainees are transported to the area in trucks and upon arrival at the campsite a tactical bivouac is instituted. Kitchens are set up and shelter tents are pitched. Regularly scheduled classes are held in this area to include night training. The soldier is taught how to orient himself on the ground and map, without the aid of a compass, by utilizing distinctive terrain features. He is taught how to use the sun and north star to determine direction. An interesting phase of training in this week is the night vision exercise. He is given the theory of light reflection, darkness adaptation, perception and scanning. One night he is taken out to put into practice the information that has been imparted to him. Scouting and patrolling occupy a goodly part of the week's activity. The trainee is instructed in day and night patrol formations, methods of movement by day or night, in night identification signals and the correct wearing apparel for patrols. The fifth day of this field training brings to a close the activity of the week. The camp is disbanded early in the morning and the men are marched back to the base camp, at the rate of two and one-half miles per hour.

Instruction in progress for 3rd Armored men.

The thirteenth and last week of training is devoted to clearing up loose ends, proficiency tests and graduation. One of the proficiency tests is entitled "The Military Stakes Course." It consists of thirteen stations and is designed to determine how much of the subject matter taught in the preceding weeks has been absorbed. At each station, the trainee is required to demonstrate his ability in a specific subject. The course is seventeen hundred yards long. It is spread over all types of terrain and for the maximum score must be negotiated within a time limit of twenty minutes. This tests the man's physical condition as well as his military education. The men being tested are given a score at each station. In order for the trainee to receive a passing score, he must amass 350 points out of a possible 500.

The final activity in basic training is the graduation exercises. The Combat Command Commander reviews the unit's achievements during the training and cites their record. Following this he addresses the graduating troops and wishes them good luck and Godspeed. Upon graduating the men are assigned to regular Army units in the United States or overseas.

The training of men with prior military service is another activity of the Division. Men reenlisting from civilian life with prior service in the Army or Marine Corps are processed and shipped to units as soon as disposition is received. Men who have served in the Navy, Coast Guard or Public Health Service are oriented to fit them into Army life. This training normally lasts three weeks, after which the men are assigned to regular units.

In the first week of their basic training, all trainees who claim musical aptitude are auditioned by the Division Band. If they demonstrate ability and so desire, at the completion of their basic training they are given an additional sixteen weeks of band training in the Band Training Unit. At the completion of this training they are available for assignment to any Army Band as directed by The Adjutant General.

A Leaders' Course

The Leaders' Course, a special course of instruction for potential leaders, was organized in May 1947. The purpose of this course is to develop the leadership potential of these selected soldiers early in their career by instruction and supervised guidance in the performance of duties as acting noncommissioned officers and instructors. It also serves as a preparatory course of instruction for men nominated to attend Officer Candidate School. It provides the Army Field Forces with men who have been fully trained and qualified as leaders. The entrance qualifications are high. The applicant must have completed basic training and have a score of ninety or better on the Army General Classification Test. A recommendation from his company commander is necessary. Rigid physical fitness tests are given. All applicants for this course are volunteers. It is open to the first-time enlistee after he has finished his basic training as well as to the reenlistee who has come back into the Army for further service.

Training is divided into two phases, each of three weeks' duration. The first three weeks are devoted to academic work with the remaining weeks devoted to practical work. The curriculum includes: leadership training, physical training, combat fundamentals and reaction tests. Upon completion of the theoretical work the student is assigned to a training company for practical work. He is given an opportunity to put into practice the instruction he has received. At the Leaders' Course the student receives individual attention. Classes are small to insure maximum personal instruction. Each man is interviewed by senior officers to determine his background, his problems, his capabilities and limitations. Emphasis is placed on the development of self-confidence. Many of the graduates are on duty with the Division as instructors, having profited by the knowledge acquired at the Leaders' Course. Other graduates are on duty throughout the world.

Specialist Courses

The training of specialists is the newest program in the field of training with which the Division is charged. It is designed to continue the training of qualified individuals after they have completed their basic training so that they will become technically proficient in the such specialties as Mess Steward, Cook, Clerk and Mechanic. Personnel completing this specialist training will be assigned to Army units as directed by The Adjutant General.

Cadre Instruction

Because of the continual turnover of assigned overhead personnel, particularly those who are used as trainers, it has been necessary to establish cadre schools for instruction in "methods of instruction" to all of the newly assigned officers and enlisted men. This school is of one week duration for officers and two weeks for enlisted men and is designed to give the latest methods in Army instruction. The Division goal is 100% attendance by every individual who will be responsible for training.

Reserve Instruction

The training of reservists, both officer and enlisted, is carried on within the Division. Reservist tours of duty vary from several days to several months. Personnel are interviewed upon arrival and assigned to duties that correspond to their past experience and education. This gives them an opportunity to stay abreast of the latest training methods by actually performing the duties. Many men from the Civilian Components have brought with them valuable ideas and methods of instruction that have been incorporated into the training program.

Spiritual Training

During the thirteen-week training cycle the Chaplains play a vital role in the program. This includes seventeen hours of lectures at company level to trainees on sex morality, citizenship and other social subjects. They also take part in graduation ceremonies and other group functions in addition to many hours of personal interviews and counsel to individuals.

Civilian committees have been set up in the surrounding communities, to work with the Division in solving the many problems which arise when civilian and military personnel are thrown together during off-duty activities. The Division believes that a well-informed public is vital to the success of its mission and the mission of the Army.

Conclusion

It is the aim of the Division to give the best possible instruction for the length of time a trainee is in its command; to make his surroundings as near home-like as possible and to demand of him the same consideration he would grant in his home. All contacts with him are as individualized and personalized as possible. It is believed that with the accomplishment of its goal the division will have gone a long way toward making the young soldier of today understand what the Army expects of him, thus invoking his sense of devotion and loyalty, and making him a better soldier and citizen.

OUR CONGRATULATIONS TO THE CADETS IN THE 1948 GRADUATING CLASS AT THE UNITED STATES MILITARY ACADEMY RECENTLY COMMISSIONED 2ND LIEUTENANTS IN ARMORED CAVALRY

J. B. Bellinger
T. W. Bowen
W. C. Buckner
W. E. Byers
T. B. Cormack
R. H. Cushing
D. E. Deehan
L. T. Doyle
J. B. Hall
J. B. Hughes
J. B. Hendricks
J. J. McCuen
J. W. McEnery
G. R. McSpadden
E. B. Nelson
D. F. Packard
W. W. Plummer
H. Perry
W. G. Thomas
F. E. Tibbets
J. G. Tuthill
T. B. Tyree
E. C. Whitehead

STAIRWAY to the STARS

by Lieutenant Colonel Paul M. Morrill

The Executive Officer of the Cavalry Branch of Career Management Group in the Army's Personnel and Administration Division charts the course for the officer career in Armored Cavalry. How do you fit the pattern?

SOME men rise to high rank and position with the speed of a rocket. Some achieve their ultimate goal in one mighty leap. Some, by virtue of birth, personality or intelligence, are marked for success at an early age. Few of these are found in the army. For most of us the pathway to higher rank and position is steep and tortuous. Slowly and steadily we climb—each step representing a new level of knowledge, experience and responsibility. Career Management may be likened to a blueprint from which each of us can build our own "stairway to the stars." Just as a carpenter builds a flight of stairs, so do we all construct our own careers. If the "lumber" be well seasoned and the "tools" sharp, then with the requisite amount of effort and skill we can build a "stairway" that will stretch unbroken to the "stars" of our desire. If any of these be lacking our "stairway" will stop short of the goal and leave us stranded with our ambitions unfulfilled.

Career Management is divided into many phases. It shall be my purpose in this article to discuss only that phase which pertains to the regular officers of the Armored Cavalry. Much has been written on this subject. Several official directives have been published and more are contemplated. Conferences have been held and speeches given. The subject is taught in our service schools. In spite of all this, the daily inquiries on various operational aspects of Career Management are an indication that it is not yet fully understood throughout the service.

A successful career in the army, as well as in any other field of human endeavor, is composed of two ingredients—ability and opportunity. Career Management will attempt to equalize opportunity so that ability may be seen and evaluated in its true light. It must be realized that the basis for any successful program of this type is a standard against which the careers of individuals can be measured. This is provided in a Career Pattern. These patterns are made up by the different arms and services and reflect the particular problems facing each branch. This must be so as it is obvious that the assignments and schools necessary to turn out a well-rounded Armored Cavalry officer will differ greatly from those required of, for example, an Ordnance or Chemical Corps officer.

The Armored Cavalry Career Pattern is shown on the accompanying chart. This pattern represents an ideal. It may never be duplicated in the career of any one officer, but it does set a standard for all. Deviations must be kept to the minimum. Furthermore, it is designed for the officer who is just now beginning his career. Officers who have up to twenty-one years of service will be fitted into the pattern wherever possible. Their schools and service will usually fit parts of the pattern and every effort will be made to give them such assignments as will best cover the missing types of service. The first step in this process was the awarding of Constructive School Credit Equivalents. Those officers with more than twenty-one years of service are beyond the scope of this program as designed and no attempt will be made to fit them into the picture.

Now look at the pattern. It covers the first twenty-one years of an officer's service. The ranks shown at the top are the permanent grades appropriate for that length of service. You will note that there are three types of assignments—mandatory, selective and incidental. The mandatory assignments are those considered necessary to qualify the officer in his basic army. Let us first consider these mandatory assignments.

During the first year of his service the Armored Cavalry officer will complete the Basic Course. That means that he will attend the Branch Immaterial Basic Course of The Ground General School at Fort Riley, and the Basic Course of The Armored School at Fort Knox. These courses will run consecutively and cover one academic year. Following this he will have two years of troop duty in a tank or mechanized cavalry platoon. These first three years are vital to the proper beginning of the young officer's career and you will note that nothing else in the pattern is allowed to infringe on this period.

Between his third and seventh year of service he should have a year of staff duty on a battalion or squad-

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Lieutenant Colonel Paul M. Morrill left a company command in 2d Armored Division in 1941 for observer assignment with the British in Egypt. As war broke he became Executive Officer of the Massaua Naval Base in East Africa. Next came assignments as Assistant G-3 of the Armored Command at Knox, and of AFHQ-Italy. He is now Executive Officer of the Cavalry Branch.

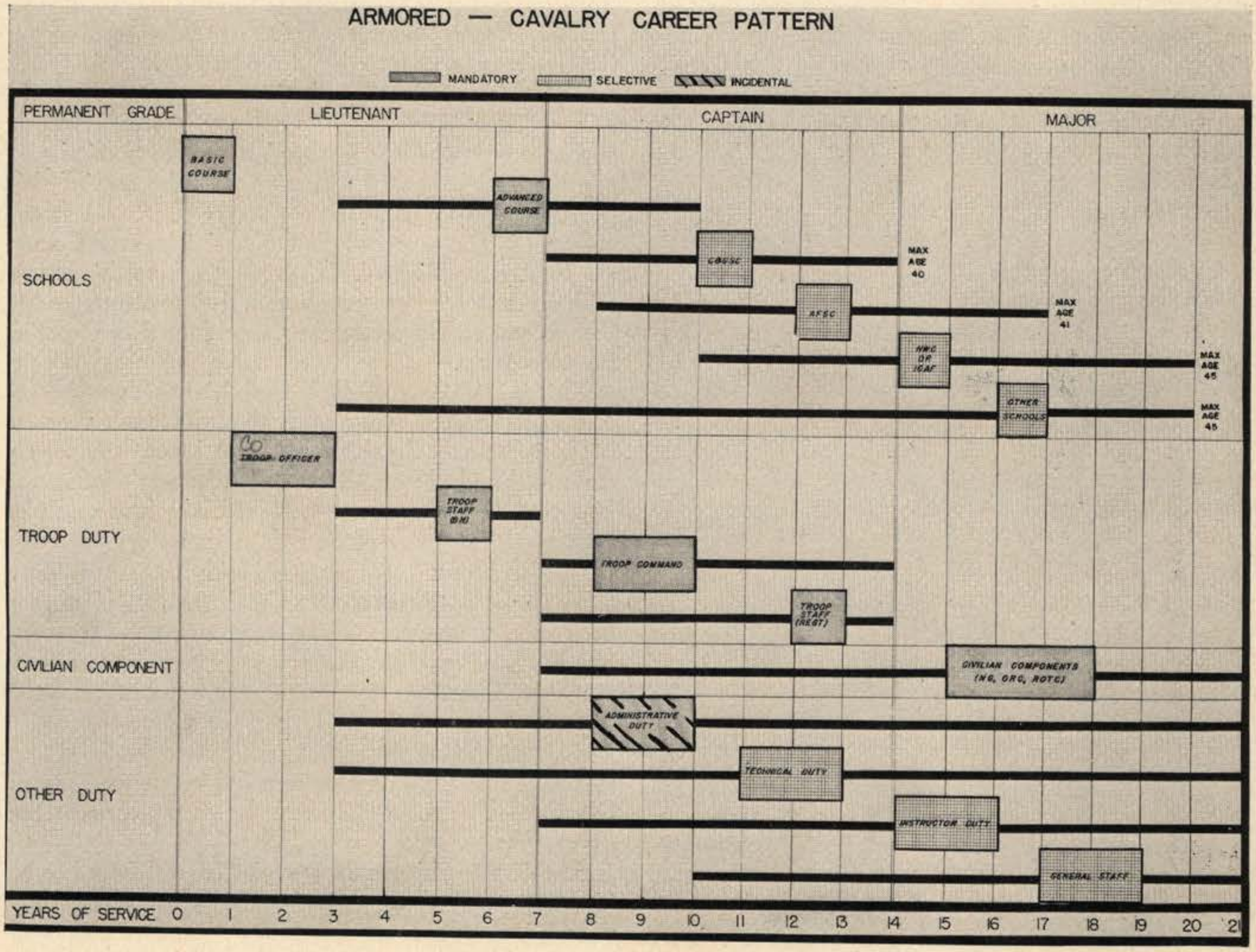
ron level. Between his third and tenth year he will attend the Officers' Advanced Course at the Armored School. At some point between his seventh and fourteenth years of service, and after completion of the Advanced Course, he will have two years of duty as the commander of a tank company or mechanized cavalry troop. During the same period he will have a year of staff duty in a combat or reserve command of an armored division or in an armored or mechanized cavalry group.

Finally, at some point after his third year of service, he can expect to serve a three-year tour with one of the civilian components. Every effort will be made to alternate the troop assignments between tank and mechanized cavalry units. These, then, are the mandatory assignments. After completion of these duties all Armored Cavalry officers should reach their twenty-first year of service (and consideration for promotion to permanent Lieutenant Colonel) thoroughly qualified and well-rounded. The opportunities will have been provided and the rest is up to the ability of the individual.

Now let us consider the selective assignments. These assignments are desirable but selection precludes all Armored Cavalry officers from getting them. Selection is based on general efficiency and ability. About one-half of the regular officers of the army (and of the Armored Cavalry) will be selected for attendance at The Command and General Staff College. This selection will take place between the time when the officer completes seven years of service and the date when he becomes forty-one years of age.

Between eight years of service and forty-two years of age about ten per cent of regular Armored Cavalry officers will attend the Armed Forces Staff College. Between their tenth year of service and their forty-sixth birthday about five per cent will attend either the Industrial College of the Armed Forces or the National War College. Between their seventh and twenty-first year of service certain selected officers will be sent to Air Force and Navy schools as well as to foreign military schools where appropriate. Officers will not be ordered to any school unless they have completed or received constructive credit for the next lower school, nor will any officer holding constructive credit for the Command and General Staff College or higher school be sent to the school for which he has already been awarded credit.

Also, at any point after completion of three years' service, certain selected officers may be ordered to technical duty such as development work in motors, communications, weapons and other fields related to the Armored Cavalry. These assignments may be preceded



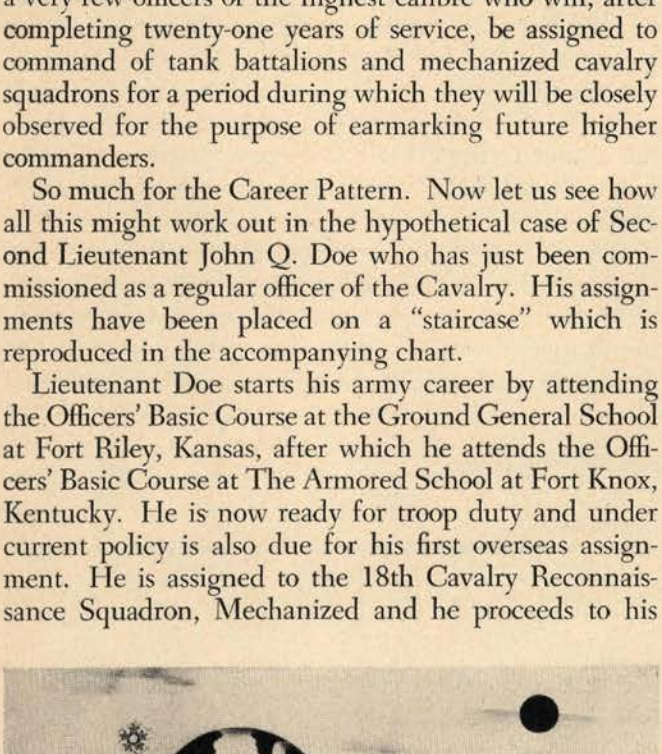
by graduate study at civilian institutions. Certain officers will be selected for duty as instructors in service schools. Also some officers will be required for General Staff duty on many levels. It must be emphasized that these are all *selective* assignments and such selections must be based on the record.

Incidental assignments are those administrative or other assignments that must be filled but which do not, of themselves, advance an officer's value to his branch. Officers of all grades get some of these assignments but the best officers get less than others.

Although not shown on the pattern, it is the intention of the Army and the Armored Cavalry branch to select a very few officers of the highest calibre who will, after completing twenty-one years of service, be assigned to command of tank battalions and mechanized cavalry squadrons for a period during which they will be closely observed for the purpose of earmarking future higher commanders.

So much for the Career Pattern. Now let us see how all this might work out in the hypothetical case of Second Lieutenant John Q. Doe who has just been commissioned as a regular officer of the Cavalry. His assignments have been placed on a "staircase" which is reproduced in the accompanying chart.

Lieutenant Doe starts his army career by attending the Officers' Basic Course at the Ground General School at Fort Riley, Kansas, after which he attends the Officers' Basic Course at The Armored School at Fort Knox, Kentucky. He is now ready for troop duty and under current policy is also due for his first overseas assignment. He is assigned to the 18th Cavalry Reconnaissance Squadron, Mechanized and he proceeds to his station in Puerto Rico. His squadron commander, being thoroughly imbued with the principles of Career Management, arranges for him to command, for six months each, a platoon of a Reconnaissance Troop, a platoon of the Assault Gun Troop and a platoon of the Light Tank Company. This is followed by six months as Motor Transport Officer of the Headquarters and Service Troop.



At this point Lieutenant Doe passes his first milestone. He has now completed his first three years of service and his probationary period is at an end. Due to the excellent instruction received at Riley and Knox and the sympathetic consideration of his squadron commander who gave him the opportunity to acquire a broad background of actual experience, as well as to his own serious application to the task of qualifying himself, he passes with flying colors. He is now well started up the "stairway to the stars." At this point he is also promoted to First Lieutenant, Regular Army.

His squadron commander now decides that some staff experience is in order and he assigns Doe as squadron adjutant for a period of six months during which he expects Doe to learn all he can about the administration of the squadron. Doe, being ambitious, spends some of his extra time with the personnel and supply officers. The next six months' period is spent as squadron liaison officer during which he is under the supervison of the squadron S-3 with considerable time being spent with the S-2. Having completed his three years overseas he is now due to return to the United States.

After taking some leave, he is assigned to Army Field Forces Board Number 2 at Fort Knox, where he spends a year as a test officer in the Automotive Section and another year as Board Librarian. At the end of this period he is released at the request of the Career Management Group to attend the Officers' Advanced Course at The Armored School. He graduates from this course with an enviable class standing and thus completes his first seven years of service and is promoted to Captain, Regular Army.

This initial phase of the Career Management period is designed primarily to qualify the individual officer in his basic branch. In this hypothetical case it has been done in the ideal way—Basic and Advanced Courses at The Armored School, two years of troop duty on a platoon level, one year of Squadron staff duty and two years of technical duty connected with his basic arm.

To continue the career of Captain Doe, we find that he is now due for an overseas assignment and his next tour of duty is as the S-2 of the 6th Constabulary Regiment in Germany. After one year on this job he is shifted to command the 11th Tank Company (M). This is a separate organization stationed in Erlangen, Germany and Captain Doe remains in command until two years later, at which time he is returned to the United States.

At this point his record is reviewed and found to be in the upper 50% of all Cavalry Regular Army officers and he is therefore ordered to the Command and General Staff School at Fort Leavenworth, Kansas. He applies himself to his studies and stands well up in his class at graduation. He is then assigned to The Ground General School at Fort Riley for duty as an instructor in the Department of Intelligence.

Here he remains more than a year after which time, because of his outstanding record, he is selected for The Armed Forces Staff College at Norfolk, Virginia. The Commandant of the Ground General School concurs in his release and he thus becomes one of the top 10% of the Regular Officers. Although this school is only of five months' duration, it deals in inter-service problems and Doe finds himself hard put to assimilate the instructions. But with his customary zeal he applies himself with such vigor that he completes the course with distinction.

Being due for overseas again, Captain Doe departs for Japan where he is assigned to General Staff duty in the 1st Cavalry Division. At the conclusion of one year on this job it is time for us to again take stock of his record. He has now completed 14 years of service. The second phase of his Career Management period is designed to broaden his training and experience. During the seven years of this second phase, Captain Doe has graduated from the Command and General Staff College and The Armed Forces Staff College. He has had one year of duty on a regimental staff, two years in command of a tank company, a year and a half as an instructor and a year of General Staff duty. His record is outstanding and he easily is approved by the Selection Board for promotion to Major, Regular Army.

He remains on his present assignment with the General Staff of the 1st Cavalry Division for the remaining two years of his current overseas tour and returns to the United States where he spends the next three years as a Mechanized Cavalry Instructor to the New Jersey National Guard.

At the completion of this duty he would ordinarily be scheduled for another tour of foreign service, but, because of his outstanding record, he is selected for the National War College from which he graduates with distinction and thus moves into the top 5% of all Regular Army officers—a sort of military Ph.D.

Having been deferred long enough to attend the National War College, Major Doe now goes to Panama as Executive Officer of the 45th Mechanized Cavalry Reconnaissance Squadron where at the end of a year we find it time to again evaluate his record.

He has now completed the third seven-year phase of the Career Management period which is designed to prepare him for future assignments on high-level staffs and for future higher command. His record is so outstanding that the Selection Board has no hesitation in approving him for promotion to Lieutenant Colonel, Regular Army. He is now a marked man in the Armored Cavalry branch and his assignment to command the 45th is directed. All concerned watch him carefully for the next two years, and he comes through with flying colors. Thus ends the Career Management Period. Colonel Doe has now completed twenty-three years of excellent service in which opportunity and ability have joined in the development of his career. The rest is up to him.

However, I am sure you will agree that it will not be long before the "Stars" toward which he has climbed so steadily will sparkle brightly on his own capable shoulders.

Armor is still the "king" of the ground battlefield, although it is clear that the terrific velocities of new guns, the increasing power of new explosives, the greater and greater use of ground mines and the growing predominance of the plane and the missile have tended to decrease its relative importance. The trend toward tracked armored vehicles is pronounced; the field artillery of tomorrow will consist almost entirely of self-propelled guns, or a species of tank. The merging of armor and the other ground arms will become more and more complete, and tanks will become rocket launchers, artillery pieces and personnel carriers, the spearhead of the ground armies.

Hanson Baldwin in *The Price of Power*

Courtesy Harper & Brothers Publishers.

Army Field Forces Board No. 2

by Colonel George W. Read, Jr.

What are we doing in the way of Research, Development, Tests? The President of one of our four Service Test Boards tells us some of the things that can be told.

ARMY FIELD FORCES BOARD NUMBER 2, located at Fort Knox, Kentucky, is one of the four service test boards set up within the Army Field Forces. It is an activity exempted from Field Army control and is under the direct supervision of the Chief, Army Field Forces.

The history of Board Number 2 may be traced back to the numerous branch boards which existed before and during World War II. These boards were charged with the responsibility of developing and service testing all items of equipment used by that arm. Obviously, there was considerable overlapping and frequently insufficient personnel to adequately cover all classes of equipment. As a part of a comprehensive reorganization of the Army Ground Forces, all branch boards were discontinued as of 30 September 1945; their responsibilities were reassigned to numbered Ground Forces Boards (now called Army Field Forces Boards) on a functional rather than a branch basis. Army Field Forces Board Number 2 has succeeded and absorbed, either totally or in part, the responsibilities formerly delegated to The Armored Board, The Tank Destroyer Board, The Cavalry Board, and The Landing Vehicle Board.

Army Field Forces Board Number 2 is responsible for service testing the following ground equipment of the Army Field Forces: all automotive equipment, weapons, ammunition, and fire control equipment of combat vehicles, amphibious equipment, medical equipment, and engineer equipment. The mission of the Board with respect to the equipment mentioned above is to: (1) evaluate all recommendations for the development of new or improved existing equipment which may be submitted to them, (2) review and study foreign equipment, (3) prepare military characteristics and recommendations for development, (4) assist Army Field Forces to maintain contact with development agencies during all phases of development and engineering tests, (5) perform user's tests of equipment when directed by Army Field Forces, (6) recommend modifications in or standardization of items tested, (7) recommend classification of standard items of matériel, (8) recommend basis of issue of items to be standardized, (9) assist in the preparation of basic training literature on the drill and technical care of matériel tested, (10) continue observation and review of reports of performance of standard items, (11) recommend maintenance procedure, replacement parts, and equipment for items tested, and (12) recommend to the appropriate service school the type of training aids considered suitable and desirable.

The normal approach to accomplishing this mission is to make a thorough study of combat action histories, battlefield reports, and recommendations from schools, troops, and combat experienced personnel to determine the requirements of the field forces within the limits of our responsibility This study considers the policies and developments in foreign countries. When it is finally determined that a requirement exists, or upon receipt of directives from Army Field Forces, military characteristics are drawn up for a certain type equipment and submitted to the Chief, Army Field Forces for approval. These characteristics are in the form of general statements and do not contain any technical details. If the item is approved, it is submitted to a technical service for detailed study and execution.

The Board then follows the progress of the development through liaison visits and the reports of Army Field Force liaison officers on duty with all the technical services. An early pilot model is then sent to the Board where it is given exhaustive service tests. As a result of these service tests the item is recommended for acceptability, rejection, or improvements. Often Army Field Forces will then direct an exhaustive field test by a troop unit which is either observed or supervised by the Board.

Are we developing equipment entirely on the basis of events and requirements noted during the last war? Not exactly. However, certain classes of equipment are basic as long as armies exist. In order to destroy an enemy in the field and to occupy our objectives, matériel to give our forces mobility and fire power is still required. Hence, we are constantly improving our equipment to gain greater performance, reliability, and universality so that it may be used more efficiently and decisively. Whether, for example, the mobile armored fire power which we recognize now as the tank will continue to look like one in the future is difficult to say, but it is certain that some form of mobile protected fire power will be required.

Colonel George W. Read, Jr., was commissioned a second lieutenant at Le Mans, France, in April of 1919. During 31 years of active duty he has served in many sections of the world. In 1945 he became Assistant Division Commander of the Sixth Armored Division. He has just completed an assignment as President of Army Field Forces Board No. 2, and is on his way to a new post in Germany.

There is maintained a close coordination and liaison between the Board and the other boards and schools of the Army Field Forces in order that all may be informed of the trends and developments in the equipment. Each agency is given the opportunity to make recommendations in the various stages of development such as in drawing up military characteristics and plans of test. When the equipment is finally developed, liaison is maintained with the various schools for the mutual exchange of information leading to development of Tables of Organization, Tables of Equipment, and tactical capabilities and employment. The final result is that the Field Forces get the type of equipment which they want and will know how to use rather than something which the developing agency feels that they should have.

Following are some trends in the development of equipment within the field of responsibility of the Army Field Forces Board Number 2:

Under development at the present time is a complete family of military engines. They are based on three cylinder size. By combining these cylinders in various combinations of 4's, 6's, 8's, and 12's, and by running them at various speeds and by adding supercharging or fuel injection, a range of engines from 60 hp to 1400 hp will be available. The maximum possible number of parts will be interchangeable. For instance, a carburetor of a 4-cylinder engine may serve each bank of an 8-cylinder engine.

The engines will be "V" type or of the flat, opposed type, commonly known as the "Pancake Engine." The entire family will be air-cooled. The air-cooled engine has a number of advantages over the liquid-cooled engine some of which are as follows: (1) less horsepower absorbed cooling the engine, (2) simplicity in design, (3) less weight per horsepower, (4) less vulnerability to small arms and shell fragments, hence greater reliability, (5) shape more adaptable to hulls and bodies of vehicles.

Eventually all transmissions will combine hydraulic torque converters and planetary gear systems. Couplings will be the hydraulic type rather than the mechanical friction clutch which will allow shifting without a break in the flow of power. It is not contemplated to have automatic shifting; the driver will be required to select his own gear ratio. The manual operation of gear shifting is a necessity for cross-country operations because it will allow the driver to anticipate his requirements.

A new cross drive transmission has been devised for tracked vehicles which effects steering by varying the speed of each track, not by braking the inside track. A vehicle so equipped can make a pivot turn in its own length by the action of the tracks turning in opposite directions. For simplified operation a "wobble stick" control has been developed for tanks which will enable the driver to move forward, backward, and if necessary, at the same time to turn right or left by moving merely the "wobble stick" in the desired direction. The new engines and transmissions will be combined in neat packages which can be removed from the vehicles as a unit by a few quick disconnecting devices. Components and accessories are being developed in families and will be interchangeable throughout the wheeled vehicle classes and tracked vehicles.

The process of tank design now has been reversed. The new tanks are being designed and built around the gun we desire; whereas, previously the desired tank was built and then a gun was sought to fit it.

Our method of having our cake and eating it is to improve the designs of our tanks so that maximum protection is gained by angularity and placement of the heaviest armor in the most critical areas. The effect of inclining armor plate at an angle, either in the horizontal or vertical plane away from the line of fire, not only increases the thickness presented to the projectile but also introduces an additional factor comparable to ricochet effect which further decreases the probability of projectile penetration.

We are still dependent on high velocity in order to get good penetration and hitting ability. The flat trajectory and short time of flight offset inaccuracies in range and lead. Therefore, increasing the hole-punching ability of the gun requires a heavier gun with heavier ammunition. This trend to heavier guns with correspondingly heavier ammunition leads us to an impasse for there is a limit to the weight that can be handled by a man in a turret. Hence, a compromise has to be made between the size of the gun and ease of loading with correspondingly more aimed shots.

The present tank turret is an intricate and crowded mass of instruments and controls, more or less unrelated. The gunner must have manual dexterity, a gift of range estimation, and the ability to interpolate these ranges on the slight reticle. With the possible addition of an automatic ammunition loader and a range finder, it has become mandatory that an integrated turret be developed as a coordinated unit. The gun will be power operated and stabilized both vertically and horizontally. Integrated controls should insure us an excellent chance of first round hits.

These trends are illustrated by tanks now in development: The new Light Tank is about ready for test. This project will provide basic chassis components not only for the tank but for self-propelled guns for field artillery and antiaircraft artillery, personnel carriers, and cargo tractors; it will combine for the first time most of the development trends mentioned above. The tank is designed to facilitate ease of maintenance. An integrated turret will be provided. If the tank proves as successful as anticipated, many of the components and principles will be applied to other tanks and vehicles.

The present Medium Tank, M26, which saw combat service towards the end of the war, is still quite usable. However, the Board is making a thorough study of the tank in order to make all desirable improvements. The improved tank should have a better gun, more power, and an integrated turret.

In the heavy tank, field pilot models have been built ranging up to 95 tons and mounting a wide range of guns. These pilots should give us an indication of the feasibility of tanks in this weight class. The Board's views on heavy tanks are not completely stabilized and probably will not be until after exhaustive tests have been made on the pilot models. The size and weight of the complete round for these large guns cause a slow rate of fire. The size and weight of these large tanks impose problems in production and logistics which might force them into the class of special purpose weapons.

In personnel carriers we see a requirement for two types: a large carrier for about 24 men and one for about 12 men. The larger one requires light all-around armor protection against air bursts, light artillery fragments, and small arms. This carrier is a full tracked vehicle with excellent cross-country and road mobility. It will be used primarily to make tactical movements of large bodies of infantry, either laterally or in the approach march. The vehicle will save time, save casualties, and save the fighting strength of the men. However, it is not a fighting vehicle for it has few weapons. It may not be organic to combat units but will probably be pooled in transport companies. A prototype, the M44, Armored Utility Vehicle, appears on a number of Tables of Organization. The carrier as yet is not in its final form or in its ultimate assignment.

A smaller personnel carrier should transport a complete squad. It will have some fighting ability, a little more armor and plenty of machine gun power. Designed as an organic vehicle for Armored Infantry to replace the present half track, it can accompany tanks, pass through light opposition, or put troops directly on the objective.

The personnel carrier will have other uses, such as, a litter carrier, reconnaissance vehicle, command post, or cargo tractor. The carriers will use components of the new Light Tank.

The present trends and future developments in amphibious vehicles fall into three groups: (1) the Weasel type, (2) the DUKW type, and (3) the Landing Vehicle Tracked type.

The full tracked Cargo Carrier, M29C "Weasel" is not truly an amphibian since it lacks deep sea-going and surf characteristics; however, it is able to negotiate very marshy lands as well as calm lakes and rivers. A new amphibian is in the design stage. It will be considerably larger than the Weasel, perhaps with a capacity of 1½ tons. It will have a very low ground pressure and should be good on snow, swamp, and muskeg. This amphibian will have the new type air-cooled engine and transmission.

The 2½-ton DUKW saw considerable combat service in the last war and proved on the whole quite satisfactory. There is a trend, however, towards a larger capacity vehicle with increased speed afloat and better loading and unloading characteristics.

Although the Navy has the sole responsibility in the development of Landing Vehicles Tracked, the desires of the Army Field Forces are incorporated in their development.

In order to expand the capabilities of tanks, improved flotation devices are being developed for overwater movements.

A new jeep or ¼ ton is considered a low priority. The present jeep is a relatively efficient machine. However the Board is advocating a vehicle resembling the jeep but having greater cargo capacity, more power, and cross-country mobility. It is visualized that the vehicle will mount a lightly armored body for command and liaison purposes, a cargo body for front-line supply and an arrangement so that it could be used as an ambulance. The vehicle should be superior to the present ¼ ton and the ¾ ton because of its greater mobility and its narrow width. After the vehicle is developed, tested, and evaluated, then a new lighter jeep will probably be considered.

The most important class of wheeled vehicles being developed is the Cross-Country Carrier. The T51 is an example of this type. It is a 2½-ton, 6 wheeled, single tired, vehicle equipped with a 200 hp flat opposed air-cooled 8-cylinder engine mounted vertically. An interesting and important feature of this vehicle is that it has self-locking differentials which allow the power to be transmitted to the wheel or wheels having traction. The carrier also has a control in the cab to inflate or deflate the tires while in motion. It should be noted that the vehicle is not called a truck; it is strictly a combat zone cross-country carrier and at present not contemplated to replace the standard 6 x 6 in the rear areas.

A similiar cross-country carrier in the ¾ ton class is now being developed, designated the T53. It has 4 single tire wheels instead of the 6 wheels of the T51.

An important project is in progress now to test commercial type vehicles. It is anticipated that in the event of an emergency, there would be an immediate demand for much vehicular equipment. Since time and equipment would be items which would be in short supply, a survey is being made now to determine the commercial vehicles which would be suitable for military use with little or no modifications. The conversion of commercial vehicles to military use would be strictly a stopgap expedient until conversion of the automotive industry could be made to military types. On test now are the Willys commercial jeeps and 1 ton Dodge Powerwagons.

An important phase of the work at Board No. 2 is a project to improve maintenance procedures. Combat experience demonstrated the need for quick repair of damaged or inoperative combat as well as general purpose vehicles. Because of the lack of abundance of supply of major items, such as trucks and tanks, often the only source of army reserve was the vehicles recovered and repaired by maintenance units assigned to the Army. The maintenance of these vehicles is extremely costly in time and personnel because of complexity of design resulting from functional requirements and limitations as to weight and size. Adequate consideration has not been given to the field maintenance problem in the design of military vehicles in the past. Therefore, there is a requirement for field maintenance that can be accomplished quickly under adverse conditions.

It is felt that next to fightability or utility in design of the military vehicles, its maintainability in the field must be considered. Accordingly, a section has been organized at the Board for systematic and thorough testing of miiltary vehicles from the mechanic's point of view in order that the down-time for maintenance may be reduced to the barest minimum. Testing is not confined to newly developed vehicles but includes vehicles which are already standard. The latter are tested to determine ease of maintenance principles and procedures in order that they may be applied to future vehicle design and not to the vehicles on hand.

The Ease of Maintenance Section has sought to reduce the Maintenance time by: (1) trying better methods and tools, (2) modifying vehicles to make them more accessible to mechanics, and (3) defining principles and requirements for new vehicles. To illustrate the extent that modification can improve maintenance time, let us take the ¼-ton jeep. The removal and replacement time of some units are as follows: (a) transmission and transfer case reduced from 2 hrs, 29 min to 35 min (b) steering gear reduced from 1 hr to 10 min (c) engine reduced from 1 hr, 18 min to 52 min. The new Light Tank will be an example of designing ease of maintenance into the tank at its inception.

The writing of military characteristics and testing of all engineer equipment in the type field army is the responsibility of Army Field Forces Board Number 2. This responsibility covers a wide range of equipment which is grouped for convenience of development into the following classes: (1) pioneer, (2) topographic, (3) bridging, (4) heavy equipment, and (5) special.

In the development of this equipment within the responsibility of the Engineer Section, constant effort is made to produce items which will have the greatest general use, may be airborne if possible without restricting the use for its primary purpose, will be easily operatable and maintainable, and will fill a requirement for the Field Forces.

The development of pioneer equipment is primarily devoted to such items as mines, mine detectors, mine eradicators, hand tools, and camouflage.

Development, now an Ordnance function, is pointed to improving our existing types of mines for interim use, and to entirely new types of mines that sometimes approach the fantastic. An attempt is being made to develop a family of mines that can be used singly or in a series against personnel or tanks.

The struggle between mines and mine detectors for ascendancy is still continuing. The nip and tuck battle that was waged between German developments and ours kept troops and scientists on both sides in continual frenzy. To cite examples of this vicious cycle, the first mines were metallic. Metallic mine detectors were developed which set up a magnetic field; the interruption of the field by a metallic mine indicated its presence. Then attachments were placed on the mine so that the magnetic field of the detector would set off the mine. This necessitated developing a new detector which would neutralize the effects of the attachment. When this problem was solved, the Nazis went to wooden, glass and finally plastic mines. The nonmetallic mines threw the detection phase in a tail spin again which required a renewed mobilization of effort, skill, and knowledge to overcome this temporary advantage gained by the enemy. Since the war, many improvements have been made in the detection of nonmetallic mines and also the portability of mine detectors. A foolproof mine detector is a great morale builder of combat troops which in turn improves their efficiency and aggressiveness.

There have been many attempts and a multitude of devices to eradicate mines. Some of the devices that appeared in the last war were the heavy rollers, flails, and snakes. All were effective to some degree but not wholly adequate. Improvements on such equipment are being made to give more positive results.

Experience during the last war clearly indicated the need for improvement in the topographic service of the field armies. Study and research have established certain general limitations which apply to all topographic equipment items. These limitations are as follows: (1) light weight and rugged construction, (2) special conditioning for both tropic and arctic operations, (3) light security in forward areas, (4) mobility, (5) air portability and air-drop characteristics where applicable.

A study program has been in progress and military characteristics have been prepared for a number of items of surveying, photomapping, map and photographic reproduction, and ground navigational equipment. Some items were confined to the correction of deficiencies of existing equipment, while others represent new developments which will require varying periods of time for full development and service testing before standardization. The following are some concrete examples:

A new line of survey equipment, such as transits and levels, is being built which will combine the best features of European types with that of the domestic type, thereby producing instruments which will have less weight, yet greater precision, strength, and durability.

Large capacity photo printing units of 50,000 prints a day are being studied to fill the requirements of a Field Army. The printing task has recently been assigned to the Field Armies in order that they may fill their own requirements from Air Force negatives.

Ground navigation aids are being developed along two lines; short range mechanical self-contained plotting units and longer range electronic position-indicating equipment. Examples of the short range devices are an improved vehicular odograph incorporating additional correction devices and gyroscopic azimuth control, and the pedograph for dismounted troops. Long range equipment includes man-packed electronic equipment with probable range up to 25 miles, and similar vehicular mounted equipment with useful ranges extending beyond 200 miles.

In addition, recommendations have been submitted for the reorganization of topographic units normally assigned to field armies, and for revisions to engineer topographic sets of equipment.

In bridging equipment the emphasis is being placed on simpler, stronger, lighter bridges with more universal use and interchangeable component parts. Considerable headway is being made in attaining the objective. For example, the successor to the Bailey Bridge will weigh about 60% less for the equivalent length and load capacity.

For division use, we shall have a footbridge, infantry support bridge, a floating bridge and a one-way fixed bridge of 60-ton capacity. As many components as possible will be interchangeable. For example, the decking of the fixed bridge will be used for flooring on the floating bridge. The net result will be that bridge equipment will require a minimum of transportation, less time to erect and will be usable to the maximum extent regardless of the type of bridge required. Components of the one-way 60-ton fixed pier bridge will be usable in the Army 100-ton. The aim in the bridging program is to keep ahead of the vehicle loads. Whereas, in the last war bridges were either too narrow or too light, the new division bridge will be wide and heavy enough to take any contemplated vehicle used in the division area.

Every effort is being made to reduce erection time. Cranes and other devices are being developed to erect and launch bridges quickly and mechanically. Related to this approach are vehicular mounted bridges possibly transported and launched from armored vehicles.

Following are some heavy items of engineer heavy equipment that the Board is connected with: tractors, scrapers, graders, powered loaders, excavators, concrete mixers, soil stabilizers, compressors, fire-fighting vehicles, power and lighting equipment, snowplows, distillation units, and insect sprayers.

The main field of the Special Equipment Sub-Section is the Field Forces engineer equipment for the Airborne Engineers and the Engineer Special Brigade. Tables of Organization and Equipment are under study to evaluate combat lessons and to keep equipment types up to date with the developing missions of Airborne and Amphibious units.

An item currently under test for underwater reconnaissance, beach obstacle clearance, and salvage is a self-contained diving suit. With this unit, a man is able to work in waters 30 feet deep for as long as two hours which is a vast improvement over the plain face mask used previously. However, it should be pointed out that more elaborate equipment is available to work throughout the full range of underwater depths.

Developments in medical equipment reflect the same characteristics as in other fields, that is, less weight and bulk and more efficiency. Policy is guided on a purely functional basis which has resulted in the development of two sets of equipment: (1) that which is required for actual combat, and (2) that which is required for rest and training areas.

For example the cumbersome, heavy Battalion Aid Station Medical Chest has been replaced with a chest that can be carried by one man. The components of the chest have been reviewed and accepted by joint representatives from the Army, Navy, Marine Corps and Air Force. Many of the old items were eliminated and useful new items recently developed have been added. Those who had the misfortune of being litter-bearers may be heartened by the development of a new lightweight litter which is six pounds lighter than the old type. Some sacrifice in durability had to be made, but the gain in comfort, and savings in energy by the carrier are more than compensating.

Continuing projects include improved lighting for medical field installations, functionally designed and packaged medical and dental kits for aid men, revision of field dental equipment, lightweight folding splints, and improved field housing for medical installations.

Army Field Forces Board Number 2, through its contact with industry, the service schools and technical services, and through its studies of battle reports and foreign developments, is seeking to remain abreast of the general situation in the world in order to be progressive and visionary with stability.

Hence in the development of equipment for the Field Forces, within the responsibility of this Board, certain factors must be met or at least considered.

(1) Does the equipment fill a requirement?

(2) Is it sufficiently simple in design and construction to be mass produced without excessive expenditure of time, men, and materials?

(3) Does it have dependable performance?

(4) Does it have universal use to limit the number of special types?

(5) Can the equipment be used with limited technical skill and training?

(6) Is the construction such that maintenance can be performed with a minimum of time and effort?

(7) Is the equipment overdesigned to outlast its life expectancy under combat conditions?

(8) Does the size and/or weight allow it to be airborne?

(9) Are parts within the same family of equipment interchangeable?

(10) Does it do the job?

(11) Can the same be done with less?

The era of small boards contending with individual branch or service requirements is forever gone. Time, money, and materials are now needed in such vast amounts that a coordinated program of development and requirements is mandatory if we are not to deplete our strength before we can apply it at the critical point.

EDITORIALS

New Editor

WITH this issue of the ARMORED CAVALRY JOURNAL, the present Editor cleans off the top of the Editorial Desk, packs a bag and retires from active service August 31st. Ever since 1942 we have wielded the editorial pencil and it is not without a bit of nostalgic regret that the time has come when we must retire from active duty. During our regime as Editor we have seen many changes occur in the JOURNAL. Some of them may have seemed somewhat radical at times but we have always believed that the JOURNAL must keep up with the changes and ideas as they are accepted by our military establishment. The splendid cooperation and indulgence in our efforts by our readers has been greatly appreciated and is proof enough of their acceptance of our editorial policies.

To our staff go our sincere thanks and appreciation for the efficient, capable and loyal manner in which they have managed the administrative, editorial and sales departments. To Captain William G. Bell, Associate Editor, whose wholehearted support and interest in the magazine have been responsible for many new and excellent ideas in format and production; and to Natica A. Brown, Business Manager, whose keen business acumen and untiring efforts and devotion to our Book Department and financial section have steadily increased our business, must be given particular commendation. Miss Brown left this month for a well earned vacation. She plans to travel in the United States and will eventually make her home in Honolulu. I am sure that the staff and Executive Council join me in wishing her "Bon Voyage" and "Aloha."

Following the publication of this issue, Colonel Wesley W. Yale will occupy the Editorial chair. To most of our readers, Colonel Yale needs no introduction. A former Cavalryman, with long experience in command and school duty, he served the greater period of the war in the 11th Armored Division as Chief of Staff and in command of Combat Command "B" in Europe. He recently returned from Paris where he was Chief of the Office of Foreign Liquidation Commission. His diverse military experience will make him a valuable asset in the governing of the affairs of the ARMORED CAVALRY JOURNAL. We turn over the Editorship to Colonel Yale with our wish for a successful and interesting tour of duty with the ARMORED CAVALRY JOURNAL.

Language Training

Our excellent continental position of the past, in which we have found ourselves conveniently flanked by broad oceans and bordered by friendly nations, has had the coincident effect of protecting us well from other countries and peoples, and, consequently, from their languages. We have remained substantially within the confines of the English language. Perhaps prior to World War II we could ride along on linguistic isolationism. Certainly today we cannot.

Europeans are well ahead of us in the ability to speak languages other than their own. The recent war has strongly indicated the need for language consciousness in our country. In particular this applies to the military. The war revealed our inadequacy. The peace is exposing our shortcomings to a further extent as a world-wide commitment goes on.

Obviously much can and will be done in our schools and colleges. General Jacob L. Devers, Chief of Army Field Forces, has recently stressed the importance of training college and university students in the basic fundamentals of foreign languages as a vital requirement for national security.

General Devers also pointed out that a working knowledge of foreign languages is essential so that American troops would be able to deal intelligently with personnel of foreign allies, as well as in the questioning of prisoners of war of a foreign foe and in relations with enemy civilian nationals when enemy territory is occupied.

A knowledge of language will effect an economy of personnel and will open the door to an understanding between our people and those with whom they come in contact. However, along with the meeting of future needs through our schools and colleges, there is a basic existing need to be met. The personnel now on duty should be in the process of achieving language goals attendant to present assignments. The Army Language Schools and other related unit efforts are a partial answer, but much of the burden rests with the individual.

We feel that we can in some measure provide an assist in the language line through the new service we begin in this issue of the JOURNAL. Your attention is directed to the inside front cover. We solicit your serious consideration and urge your positive action. This is an opportunity for furthering your career; one to increase your value to the service and to broaden you as an individual and a citizen. The method is established. The expense and effort are negligible; they are steppingstones to a worthwhile result.

Correction

In our last issue we carried an editorial covering the change of command at The Armored Center, with portraits of General Leonard, the departing Commander, and General Livesay, his successor. Unfortunately, these photo cuts became reversed during the preparation of the page for the press run—and after the approval of a correct final page proof. We wish to apologize for the error, and we hope that everyone received it as graciously as did General Livesay, who responded to our letter with the generous comment that those who knew either General Leonard or himself would recognize it as a quite human error: to those who knew neither one it would make little difference.

MERGER DISCUSSION GOES ON

The discussion of the question of merging the various Journals of the Ground Arms has progressed to a considerable degree since our last issue.

The staff of the ARMORED CAVALRY JOURNAL and the President of the Association feel that in principle the merger idea represents a great step forward; the resulting publication should be a monthly professional magazine, strictly nonpartisan in character and having access to an author field hitherto denied the individual periodicals.

A poll of ARMORED CAVALRY JOURNAL readers and subscribers at Fort Knox, made without any attempt to influence the result, discloses that 80% agree with our views.

In order to carry out these views, the representatives of the Association believe that not only should we conditionally agree to, but lend our efforts towards a merger of the ground forces magazines; *insisting only on the proviso that the nonpartisan and professional character of the new association and magazine be preserved through action of an Executive Council;* this Council being composed of a representative from each Branch, and with a President elected by the Council from outside their own ranks.

Preliminary discussions with representatives of the Field Artillery and Coast Artillery Associations have indicated their strong endorsement of this effort to unify the Ground Forces Branches through merger, providing that the above conditions are met. Unfortunately, complete agreement with the Infantry has not yet been reached.

There is a rising sentiment for a merger of the two artillery journals with the ARMORED CAVALRY JOURNAL in the event that an association of all four ground forces proves impracticable. The Editor would appreciate hearing the views of the readers on this latest proposition.

No final decisions will be made without balloting all Association members.

SUBSCRIPTIONS AND THE MERGER RUMORS.

Do not allow rumors of a possible merger of Ground Forces magazines to influence you in the renewal of your subscription to the ARMORED CAVALRY JOURNAL.

No merger can be effected without the consent of a majority of the members of the Armored Cavalry Association. In the event that a merger is carried out, our subscribers will be fully protected either by a proportional return of the subscription price, or by applying their credit towards a subscription for the new magazine.

Under the most favorable conditions, and granting that all points at issue can be met, it will take several months to poll readers of the different magazines and to effect the legal steps incident to forming a new association.

The Selective Service Act And The Expansion Of The Army

The enactment of the Selective Service Act has made possible the organization of an effective striking force. Existing units will be filled out in strength, and new units will be going into operation. Here are the units that will fit the program.

TRAINING UNITS NOW IN OPERATION

4th Infantry Division, Fort Ord, California
5th Infantry Division, Fort Jackson, South Carolina
9th Infantry Division, Fort Dix, New Jersey
3rd Armored Division, Fort Knox, Kentucky

NEW TRAINING UNITS

5th Armored Division, Camp Chaffee, Arkansas
10th Infantry (Mountain) Division, Fort Riley, Kansas
17th Airborne Division, Camp Pickett, Virginia
101st Airborne Division, Camp Breckenridge, Kentucky

TACTICAL UNITS

2nd Armored Division, Camp Hood, Texas
2nd Infantry Division, Fort Lewis, Washington
3rd Infantry Division, Fort Benning, Georgia
8th Infantry Division, Camp Campbell, Kentucky
(Less one Combat Team, Fort Devens, Mass.)
82nd Airborne Division, Fort Bragg, North Carolina
Airborne Division (Unidentified) Camp Atterbury, Indiana
A Light Cavalry Regiment, Fort Devens, Massachusetts

Additional service and supporting troops at Fort Bliss, Texas, Camp Carson, Colorado, Fort Meade, Maryland, Camp Cooke, California and Fort Worden, Washington.

NATIONAL GUARD UNITS IN THE PROGRAM

49th Armored Division, Texas
26th Infantry Division, Massachusetts
28th Infantry Division, Pennsylvania
31st Infantry Division, Alabama and Mississippi
43rd Infantry Division, Connecticut, Vermont and Rhode Island
45th Infantry Division, Oklahoma

The armored divisions mentioned above, with their commanders, are as follows:

2nd Armored Division, Camp Hood, Texas, Major General James G. Christiansen.
3rd Armored Division (Training), Fort Knox, Kentucky, Major General Roderick R. Allen
5th Armored Division (Training), Camp Chaffee, Arkansas, Major General Robert S. Beightler
49th Armored Division (National Guard), Texas, Major General Albert Sidney Johnson

The Assistant Commandant of The Armored School gives us the high points which form the basis and guide for Armor employment. "There is no place for the words *always* and *never*."

THE PRINCIPLES OF THE EMPLOYMENT OF ARMOR

by Brigadier General Bruce C. Clarke★

INTRODUCTION

THE last ten years have seen great changes in the art of warfare. Air power has profoundly changed our military concepts, but it has not eliminated the need for ground forces. Rather, it has served to weld more closely together the several armed services into an overall, balanced national defense team wherein each service aids and is in turn aided by the others in accomplishing a common mission.

On the ground, we have seen more open and fluid warfare, faster movements, more dispersion, more elastic defense formations, and the ability to concentrate great power at a particular point, thereby making the penetration a more commonly used maneuver. Armor has been responsible for much of this change. We have witnessed the employment of armored divisions, armored corps, and armored armies. The new type field army of the American Army is virtually an armored army. It has approximately 3500 tanks plus much self-propelled artillery.

The ability to produce the mechanical means of warfare and to employ those means is an outstanding asset of the United States. We must develop and use this asset to offset the advantage of more manpower possessed by our possible opponents. The use of armor is in furtherance of that concept. It is also in furtherance of our efforts to reduce casualties on the battlefield.

Armor is the arm of mobility, armor-protected fire power, and decisive shock action. Armor is a vital and regular member in the ground team. Armor brings within reach of the field army commander decisive objectives. It provides on the modern battlefield the means by which the army commander can achieve the ultimate objective—destruction of the enemy's will to fight.

There are certain basic principles which govern the employment of armor—but they are no more than guides. As in the rules of bridge, there is no place in the principles of employment of armor for the words *always* and *never*. The successful application of the principles of armored employment is entirely dependent upon commanders and staffs being flexible in mind, progressive in thought, and liberal in imagination.

ARMOR PLAYS THE HISTORIC CAVALRY ROLE

Armor fulfills the role in modern warfare that Napoleonic cavalry fulfilled in the 19th Century. It combines great mobility with overwhelming fire power. Cavalry of the later 19th Century and the 20th Century relied primarily on mobility. The fire power of armor must not be overlooked in a consideration of its characteristic of mobility.

For many years armies have sought light, fast-moving units that could upset the time-space factors of the opponents. They were willing to sacrifice some power in order to attain the mobility desired. The cavalry was developed into such a force. With the wide use of the automatic small arms and other effective weapons, and of automotive vehicles, the horse no longer was an effective weapon or an efficient means of transportation on the battlefield. Armor, which combines both high mobility and great fire power, has assumed the historic cavalry role in modern war.

ARMOR IS A STRATEGIC AND TACTICAL THREAT

Armor is a strategic and tactical weapon. Not only is the presence of armor locally a threat to any force, but its capabilities of long movements and prompt commitment make the presence of distant armored units a threat to any operation.

ARMOR USES ITS MOBILITY

Armor has been described as "mobile, armor-protected fire power." Armor gains its ends through its ability to move and shoot, but above all, to move. An armored formation many miles away has the ability to intercede in a battle in from 10 to 20 per cent less time than a formation geared to the foot soldier. Armor moves in a fighting formation. To its speed of movement, then, must be added its ability to be committed promptly from march formation. Mobility in armor is derived not only from tanks, armored personnel carriers, and self-propelled artillery, but also from the extensive organization of mobile service support at all echelons from company to division.

ARMOR USES ITS FIRE POWER TO CLOSE WITH THE ENEMY

Armor concentrates its power at the decisive point of action. Armored formations contain an overwhelming superiority of armor-protected machine guns and cannon. The tank cannon is essentially a weapon used

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★General Clarke's photo and biographical sketch appear on page 9.

against enemy tanks. It is not artillery. In the application of armor's fire and shock power, artillery and other supporting weapons provide the covering fires which enable the tank machine guns and armored infantry to close with and destroy the enemy.

Armor In Strength Produces Decisive Shock Effect

The shock or psychological effect which comes to troops on the receiving end of a massed armored assault is terrific. This effect radiates from the point of attack in concentric semicircles as do the waves from a stone dropped in the water near the edge of a millpond. If the attack is in strength, these shock waves reach to the enemy division, corps, and army headquarters. Shock effect gives armor part of its protection and hastens the disintegration of the enemy force attacked. The shock effect of the mass employment of armor varies as the square or cube of the number of tanks used. Attacking with armored strength too small to produce decisive shock effect often results in great losses and inconclusive results.

Armored Formations Must Be Flexible

It is not given to many to be able to visualize all that can happen during a full day of armored action. Unforeseen contingencies occur. Situations as to terrain, weather, footing, obstacles, and enemy cannot be accurately predicted far into the future. A set formation for all situations is a dangerous oversimplification in armored tactics. The armored division is designed to fight in two flexibly organized combat commands. Each is composed from time to time to perform most advantageously the job at hand. Each is commanded by a general officer who has a staff adequate for handling operations in fast-moving situations and trained to work under mission-type fragmentary orders.

Armor Is a Thrusting Weapon

Armor is a weapon which should be thrust quickly through enemy opposition on a relatively narrow front. It is strong as long as it remains in depth. It should not fan out until the opposition has been reduced and powerful enemy counterreaction is no longer probable.

Armor Stays In Column for Strength

This does not mean that it necessarily moves on a narrow front or on only one road. It may advance on a broad front, but so long as the tactical formations of the division and combat commands are in column, the commanders are ready for any contingency and prompt action can be taken without waiting for higher staff reaction and direction. Breaking through and out of an enemy defensive zone in a column of combat commands gives as much or even more effective power in the break-through, and at the same time saves an uncommitted tactical command to handle contingencies and to push on promptly in exploitation. Armor formations are organized in anticipation of success.

Armor Drives Deep, Assembles, and Destroys

An armored unit commander must observe the principle of the objective. An engineer who wishes to blow down the face of a rock wall bores deep, assembles his charge, and blasts back. He does not place his charge on the face of the wall. Armored action is similar. What protects armor during this process? The answer is speed, mobility, flexibility, enemy command and staff inertia, and the time and space factors which control the ability to react to such a force. The shock effect of armor reaches even to commanders and staffs and adds to the inertia and the time it takes to react.

Armor Needs Mission-Type Orders

Armor should be given a mission and the minimum essential restraining and coordinating directions. It should be given the ultimate and decisive objective of the next higher commander so it can take prompt advantage of breaks in order to make great gains.

Armored Action Calls for Combined Arms Teamwork In Lower Echelons

Armored formations contain, in intimate association, tank, infantry, engineer, and artillery elements. This may, and often does, extend down to the company level, where the tank company may have infantry and engineers as well as the ever-present artillery forward observers. Such a situation on the battalion level is usual. It should not be assumed that the tank unit commander is always in command. Often the armored infantry unit is the basic force to which tanks and engineers are attached, and artillery closely supports.

Once the Momentum of a Armored Attack is Attained It Should Be Allowed to Run Its Course

An armored division has enormous momentum when it gets rolling. To dampen this by phase lines, limited objectives, and other factors that require high-level decisions in order to continue to advance, dissipates that momentum—often faster than does the enemy. Any restriction on movement may provide the enemy with time to react and will frequently result in loss of the initiative.

Successful Armored Action Is Characterized By Deliberate Planning Followed By Violent Execution

Armored action involves large road space, close timing, elaborate supply plans, and extensive plans for maintenance. It involves careful coordination and teamwork with all arms. Artillery, mortar, and air support must be tied in. Communications must be coordinated and perfectly established. To do all these requires thorough and deliberate planning.

Once the planning is done, the execution is the payoff. It must be violent if the mobility, fire power, and shock effect desired are to be attained. Halfhearted execution is fatal to the results expected from armored action.

ARMORED ACTION REQUIRES SUPPLY AND MAINTENANCE

Adequate plans and facilities for supply and maintenance are essential. It takes about 1000 gallons of fuel to move an armored division a mile. An armored unit out of fuel is easily destroyed. Fire power means consumption of large quantities of ammunition. Food is necessary. In the typical armored action, supply routes may be cut by enemy action for several days. These contingencies must be foreseen and means provided to assure success. The combat command should carry with it the supplies necessary to reach the final objective and hold effectively.

Tanks and other armored vehicles require frequent and complicated maintenance. The means are available in the armored division; the time must be provided if a favorable balance of combat vehicles is to be kept in action against the enemy for sustained operations. The rotation of combat units through the reserve command and the infrequent employment of the reserve command as a combat command will provide the necessary time for maintenance.

ARMORED DEFENSIVE ACTION IS ELASTIC

Armor can conduct and has conducted very effective defenses. It does this by being elastic, by rolling with the punches, by counterattacks, and by anticipatory thrusts to upset an enemy attack forming up. It does not establish a brittle line. It disposes itself in considerable depth. While defense has not been the role normally associated with armor, its capabilities on defense in future warfare must not be overlooked.

ARMOR AND TACTICAL AIR ARE PARTNERS

It is literally true that armor and tactical air when working close together form a team with enormous power. This partnership does not happen by chance. It takes close association, careful air-ground training, and an intimate understanding of each other's capabilities, limitations, and methods to attain the desired relationship. Armor is the one that needs the support. It must go far more than halfway, if necessary, to effect the partnership.

AN ANALOGY OF MODERN FOOTBALL TO ARMORED ACTION

The accompanying diagram of a modern football play executed from T formation well illustrates a typical action of a corps of two or more infantry and one or more armored divisions. The infantry divisions are the line; the armored divisions the backfield. Let us now note the many principles of armored action which are well illustrated:

a. Before the point of attack is disclosed there is a threat all along the line.

b. There is deception.

c. Teamwork is highly developed.

d. The support is carefully organized.

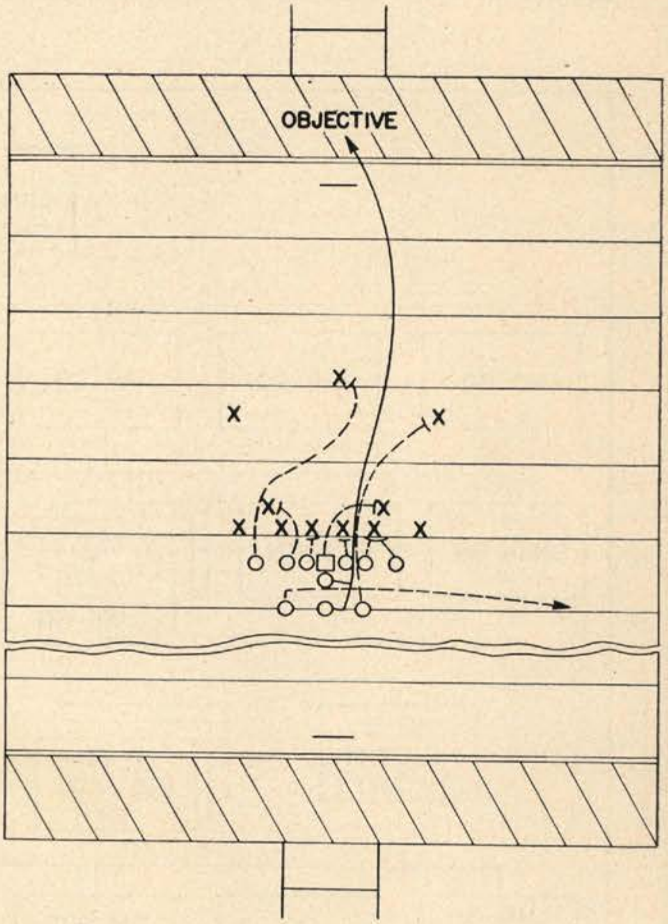
e. The ultimate objective is known and is decisive.

f. The attack thrusts quickly through the defense line on a narrow front.

g. The attack goes through the defensive line in column for power and for flexibility to take care of contingencies.

h. The attack drives deep. It does not mop up those that are by-passed.

i. The defense is disposed in depth, is elastic, and is highly mobile.

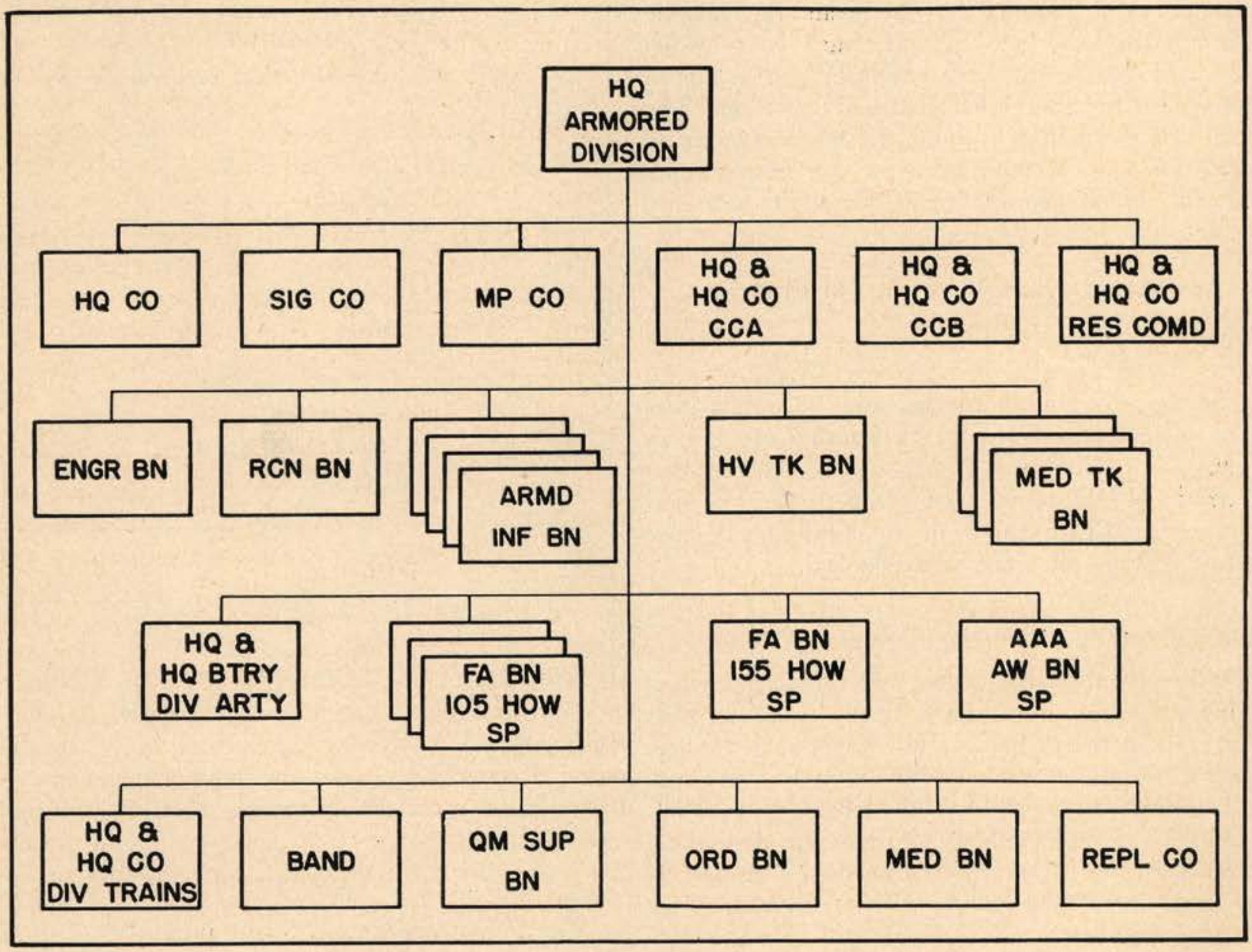


CONCLUSION

The proper application of the principles of the employment of armor will produce outstanding results. They should be considered not as rules, but as guides after carefully estimating the situation. Deliberate planning is needed. Violent execution then pays the dividends. Flexibility of mind, concept, and formations is required of an armored commander and his staff. He must be willing to take coldly calculated risks. When he holds the cards he must back them up with all his chips, and often he must be willing to put in all his chips when he is not sure that he holds the winning hand.

THE ARMORED TEAM

Today's Armored Cavalry unit is the complete refinement of the Ground Forces Team. Within the parent Armored Cavalry Branch there is the ultimate in teamwork among the combat arms and the services—unification in spirit and in fact. This fine balance in arms and services is illustrated in the chart below and is discussed in the articles immediately following.


HQ ARMORED DIVISION
HQ CO
SIG CO
MP CO
HQ & HQ CO CCA
HQ & HQ CO CCB
HQ & HQ CO RES COMD
ENGR BN
RCN BN
ARMD INF BN
HV TK BN
MED TK BN
HQ & HQ BTRY DIV ARTY
FA BN 105 HOW SP
FA BN 155 HOW SP
AAA AW BN SP
HQ & HQ CO DIV TRAINS
BAND
QM SUP BN
ORD BN
MED BN
REPL CO

ARMOR IN THE TEAM

by Lieutenant Colonel Creighton W. Abrams

Teamwork is a positive and tangible result of a blending of forces, each in its proper proportion, each exploiting its outstanding capabilities and complementing the limitations of others to produce a concerted effort toward the achievement of the ultimate objective.

DURING World War II, the ground army operating jointly with the Tactical Air Force in a series of brilliant campaigns destroyed one of the best trained and equipped armies the world has yet produced. This success was achieved despite the far greater battle experience of the German Army, their development and exclusive operational use of large rockets, their operational use of jet-aircraft, and the widely accepted superiority of their armored equipment, notably tanks. Postwar writing and discussion have not entirely clarified the apparent contradiction between results and the superiority of German arms. In fact, so much has been written and widely publicized about the mistakes in leadership, the errors in procurement, and the inferiority of equipment that—victory the fact—appears to be —victory by "luck."

World War II was not won by "luck." While mistakes were made and much can be learned through examination of past errors, there is a wider field for learning through study of the principles, the factors and the techniques which contributed to the decisive victory by American arms in World War II. Many factors have contributed to the success of American arms, but the greatest of all is the fundamental principle of teamwork. Teamwork is a positive and tangible result of a blending of forces, each in its proper proportion, each exploiting its outstanding capabilities and complementing the limitations of others to produce a concerted effort toward the achievement of the ultimate objective.

The necessity for teamwork is understood by all from the veteran rifleman, who knows what tanks and artillery can do when they all work together, right up to the top where Army, Navy, and Air have been joined to achieve a concerted effort. In World War I, the ground combat team consisted principally of infantry, engineers, and artillery. World War II added one other member to this team—armor.

The objectives of the field armies of World War II were seized by a combat team of infantry, armor, engineers, and artillery supported by a proper balance of service units. Tanks became essential to the successful operation of infantry divisions. Mechanized cavalry units as economy forces filled the great gaps in mobile operations providing security and reconnaissance for the major elements. In Africa and Europe, the armored division became a full member of the ground team, placing in the hands of the field commander the means for rapid seizure and holding of decisive objectives of great tactical, and often strategic, importance.

In the ground team, armor is the arm of mobility, armor-protected fire power, and decisive shock action. Mobility in armor is attained not only through the wide use of tanks, full-tracked personnel carriers, and self-propelled artillery, but also through the extensive organization of mobile service support at all echelons of command. The extensive use of radio communication supports mobility and permits effective command control in the most fluid operations. The separate battalion type of organization permits the greatest flexibility and latitude in the commitment and control of armored units in a war of movement. Mobility permits the rapid concentration of fire power at the decisive point of action. The characteristic of "armor-protected fire power" permits the maneuver of armor under fire of machine guns, mortars, and artillery and the effective return fire of crews within the armored vehicles. Mobility and fire power produce shock action. Shock action is a psychological effect achieved upon the mind of the enemy soldier or leader when fear or apprehension replaces judgment and common sense. Armored action achieves this to a decisive degree as shock action travels with an ever-broadening effect from the front-line enemy soldier to his division, corps, and army commanders.

An understanding of the characteristics of armor is only the foreword to the employment of armor. The successful application of the principle of teamwork to the employment of armor in the ground team requires the assignment of objectives and missions which will utilize to the maximum the distinguishing characteristics of armor. This applies with equal importance to tank units organic or attached to infantry divisions, the armored cavalry regiment (light), and the armored division.

In the infantry division, tank units are provided to

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support the rifleman in the accomplishment of his mission in both offensive and defensive operations. The word "support" does not imply a position to the rear or defilade within the division zone of action. Nor does support imply the availability of a tank or tank section to each small group of riflemen in the division. Tanks, organic or attached to the infantry division, should be employed at the decisive point of action in the greatest numbers possible. The mobility of tank units will permit rapid concentration at the decisive point of action. The plaintive wail of the indecisive and unimaginative who fancy, like the ostrich with his head in the ground, some security by equal distribution of strength throughout the depth and breadth of the division zone, must be ruthlessly resisted. If tanks are to make the contribution in the infantry division of which they are capable, then they must be employed to take maximum advantage of mobility, armor-protected fire power, and decisive shock action. This means in many cases preserving the tactical integrity of the tank company and tank battalion and providing for it the necessary infantry, engineer, and artillery support.

The armored cavalry regiment (light) is another armored formation differing somewhat in equipment and organization from the tank battalion or the armored division. The armored cavalry regiment (light) is the most mobile of armored units. It lacks the heavy gun fire power of tanks or the armored division. The self-contained organization of its platoons, companies, and battalions and the extensive use of radio communication make it admirably suited for deployment over broad frontages as a security force to permit the concentration of other forces at the decisive point of action.

The armored division is the largest armored formation. It is in itself a force of combined arms. The armored division provides the corps or army commander with the means to seize rapidly and hold distant and decisive objectives. In defense, it provides depth to the corps and army sector and the most effective means of countering penetrations of the defensive organization.

The armored division is a decisive weapon. It is assigned the ultimate objective of the next higher commander. The opportunity for the employment of the armored division in offensive operations is frequently created by infantry divisions. This technique results in overcoming initial obstacles to secure terrain from which the launching of the armored attack will permit the use of armor's mobility and fire power.

The minimum controls are placed upon the operations of the armored division. Phase lines, intermediate objectives, and boundaries restrict the mobility of armor. Armored action is fast moving, and unnecessary controls only cause delay and jeopardize the successful accomplishment of the corps mission.

The armored division should be given and should use mission type orders. It is unrealistic for the corps commander to assume that he can visualize the circumstances in which the armored division will find itself three days hence and one hundred miles behind the enemy lines. It is even more unrealistic for him to visualize that he will be on the spot at the time to make appropriate decisions. The greatest possible latitude should be permitted the armored division commander in the movement, formation, and disposition he makes to accomplish his mission. Only then will the mobility and flexibility of armor be fully utilized.

The armored division in conjunction with Tactical Air is the principal means available for the destruction of large enemy armored formations. Therefore, a realistic view should be taken in the conduct of the defense. A line of defense as such has no strength. Strength in defense comes in depth which permits maneuver of forces not engaged to create a favorable balance of forces at the point of penetration. Depth should be considered in terms of miles and not in yards. The armored division should not be employed in the line for the primary purpose of making a continuous line. The most effective use of the division in the corps and army team is its employment in a position in depth where it can maneuver properly for the purpose of destroying penetrations.

The armored division is a teammate of Tactical Air. The flexibility of formation and the ability to concentrate effective power and influence over wide sections of the battle zone are similar. The teaming of these two forces deep in the enemy's rear achieves the maximum in destruction of matériel and the enemy's will to fight.

Finally, there is one weapon more effective than any arm or service or equipment: the weapon upon which the future of the army depends—TEAMWORK! Teamwork motivated by flexibility of mind and progressiveness in thought—teamwork that will cut across boundaries of jealousy and prejudice without permission—teamwork that does not recognize rigidity in unit organization—teamwork inspired by objective and selfless leadership.

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- SEE THE INSIDE FRONT COVER

Modern Armored Cavalry Organization

by Lieutenant Colonels James I. King and Melvin A. Goers

The characteristics of Armored Cavalry—mobility, protected fire power, shock—are represented in our new Armored Cavalry organizations—The Armored Division: The Armored Cavalry Regiment (Light): The separate Tank Group: The Amphibious Tank Battalion. Here is how they fit the picture of our modern Army.

MILITARY operations in World War II conclusively demonstrated that success in combat can only be accomplished by a well-balanced team. Each member of that team must assist other members, and in turn be assisted in order to accomplish a common objective. Armor is a part of the army team providing the army and corps commanders with a decisive tool to influence the course of battle.

Military organizations are established to accomplish definite missions. The materials available for the construction of an army troop unit are, to put it simply, men, weapons and vehicles. However, the military architects must provide these materials in the proper ratio so as to incorporate control, destructive fire power and mobility within the unit.

The main characteristics of modern armor are mobility, protected fire power, and shock action. These characteristics were present at the time armored formations were introduced on the battlefield in World War I. The tank of that day was conceived to break the stalemate of trench warfare and overcome the superiority of the machine gun.

During the years between World Wars I and II progress in mechanization proceeded at an exceedingly slow pace. For example, as late as 1938, the Chief of Cavalry wrote in a memorandum to the Chief of Staff: "It (Mechanized Cavalry) has not yet reached a position in which it can be relied upon to displace horse cavalry. For a considerable period of time it is bound to play an important but minor role while the horse cavalry plays the major role so far as our country is concerned. I feel that the psychology of the public as well as that of important key men in our legislative branches and men in the army itself has mistakenly become unfavorable to the horse. We must not be misled to our own detriment to assume that the untried machine can displace the proved and tried horse."

The world had not long to wait for the battle trial of the machine. The German army gave a tremendous demonstration of the capabilities of the service team heavily supported by armor in the early days of World War II.

The German successes produced the cause, and the effect was the establishment of the Armored Force in July 1940.

The Armored Force was first organized along lines tested in combat by the German army. As one military historian describes it, "The Germans used the time-honored principles of aerial and ground reconnaissance, artillery and dive-bombing 'softening-up', clearance of obstacles by the engineers, a swiftly rushing mass of maneuvering tanks to a weak spot in the enemy's line or enveloping the flanks, the destruction of the enemy's vital rear installations by the armored vehicles, and the infantry cleanup. Superior power at a decisive point was the key to their success. This is a compressed summary of their tactics and cannot do justice to the detailed refinements applied to meet varying opposition and terrain." Speed, surprise, teamwork, and resultant confusion created were the essence. American armor was developed along these lines and acquitted itself with distinction in combat.

The present-day major armored formations are: The Armored Division; The Armored Cavalry Regiment (light); the separate Tank Group; and the Amphibious Tank Battalion. However, armored units have

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Lieutenant Colonel Melvin A. Goers is a graduate of the University of Illinois, Class of '40. He received a Reserve Commission and entered upon active duty in August of 1940, receiving his Regular Army commission in 1942. He served in the ETO during the war and is a graduate of the Command and General Staff College. He is at present Assistant G-3, The Armored Center.

been formally adopted by the Infantry Division, in that a Heavy Tank Battalion and a Reconnaissance Company are organic to each Infantry Division, and one Heavy Tank Company is organic to each Infantry Regiment of the division. Where the Airborne Division is concerned, it is proposed that in the event of a requirement of sustained ground combat this division will be augmented by the attachment of a Heavy Tank Battalion, a Reconnaissance Company, and the necessary service support. Worthy of note is the possibility of development of an air transportable armored formation.

Just what is the physical make-up of the Armored Units?

The organization of the Armored Division is hinged upon its main role, which is to conduct highly offensive warfare. It is composed of self-contained units of the required arms and services. It is the basic large armored unit of combined arms.

Through the various stages of its career the authorized tables of organization strength varied as lessons were learned in combat. A tabulation brings these changes out clearly:

Date	*Authorized T/O Strength*
15 July 1940	9,859
15 July 1941	14,771
15 Sept. 1943	10,933
Present	15,830

Intensive studies of combat actions of Armored Divisions were conducted following the conclusion of World War II. As a result of these studies it was apparent that certain changes were necessary in the structure of the Armored Division and in the ratio of the various arms assigned. These changes were designed primarily to increase the combat effectiveness of the division and to bolster the available service support.

The structure of the Armored Division (see lead page) bears a striking resemblance to the first American armored division organized in 1940, which consisted of five main elements or echelons, namely: a command echelon, a reconnaissance echelon, a striking echelon, a support echelon, and a service echelon. The composition of these five echelons has changed as combat experience was gained, but the basic concept has survived throughout.

The Armored Division is organized to provide flexibility in the formation of combined arms teams; this flexibility is provided by the Combat Command and separate battalion organization. The Combat Command is a tactical headquarters commanded by a brigadier general to which combat troops are attached by the division commander to perform a particular mission. Tanks, Infantry, Artillery, Engineers, and Reconnaissance elements are assigned in the ratio which best fits the mission. Added to these combat elements is the essential service assistance from the Maintenance Battalion, the Medical Battalion, and similar units, to support the Combat Command. In addition the Division Signal Company provides: radio vehicles and personnel to establish air request nets; specialized teams for radio repair; and, in certain circumstances, other personnel and equipment, such as wire teams, in support of the Combat Command.

In addition to the two Combat Command Headquarters and Headquarters Companies, a Reserve Command Headquarters and Headquarters Company is provided, organized in the same manner as the Combat Commands, but commanded by a Colonel. Here the similarity ends, since the considered primary mission of the Reserve Command is that of command and control of the combat elements of the division not attached to combat commands, and the rehabilitation of units withdrawn from combat. The Reserve Command has, however, the full capability of being employed as a Combat Command when necessary to employ the reserve. Here is a major structural change, since in the World War II Armored Division, the Reserve Command had insufficient assigned personnel and equipment to enable it to function as a tactical headquarters when required.

Looking at the tank units of the division, we find that a Heavy Tank Battalion has been added. At first glance the remainder of the tank strength seems unchanged. Upon a more detailed investigation of the Tables of Organization it is determined that each Medium Tank Battalion now has four Medium Tank Companies instead of three Medium Companies and one Light Company. Therefore the Medium Tank strength has been increased from 168 to 216, or percentagewise, an increase of approximately 30 per cent in medium tanks. In comparison, the Heavy Tank Battalion is composed of three tank companies; however, each company has four platoons instead of three platoons as found in the Medium Tank Company, for a total of 63 heavy tanks. Putting this all together it is noted that 111 tanks of the medium and heavy class have been added, with a loss of some 43 light tanks within the tank units.

The Heavy Tank Battalion is capable of performing all the missions assigned to the Medium Battalion; however, this battalion is characterized by great penetrating fire power with slightly less maneuverability and cross-country mobility than the Medium Tank Battalion.

The "Queen of Battles" is represented in this team of combined arms, in the form of Armored Infantry. Armored Commanders have continuously asked for more infantry to support the tank units in combat. Their call has been heeded, and the Armored Division will have four Armored Infantry Battalions, with four rifle companies each, as compared with the World War II organization of three infantry battalions of three companies each. The ratio of infantry to tanks in the Armored Division has varied as armor came of age. For example, in the Armored Division of 1942, there were 6 battalions of tanks and three battalions of infantry. In 1943 the proportion of tank battalions to infantry battalions was equalized. This ratio has been maintained in the division organization.

Moving to the Artillery organization, this division has an organic Division Artillery Headquarters and Headquarters Battery; three battalions of 105mm Howitzers each of three batteries of six guns; one battalion of 155mm Howitzers against three batteries of six guns; and one antiaircraft automatic weapons four-battery battalion. All are self-propelled. The 155mm Battalion and the Antiaircraft Battalion are the new organic faces in this organization. It is noted that the added 155mm Battalion will give increased depth to combat, and is a powerful organic support weapon available to the division. The Antiaircraft Battalion has been added to provide local protection for elements of the division against enemy air attacks, with a secondary mission of firing on enemy mechanized or other ground targets. Generally speaking the artillery team member has the mission of rendering close and continuous fire support to the elements of the division, neutralizing or destroying those targets which are most dangerous to the supported force.

The tables of organization provide the division commander with a tool for security and reconnaissance missions in the form of the Reconnaissance Battalion. This battalion consists of a Headquarters and Headquarters and Service Company, four Reconnaissance Companies and a Medical Detachment as compared to the former organization of a Headquarters and Headquarters and Service Troop, four Reconnaissance Troops, a Light Tank Company, and an Assault Gun Troop. In order to overcome the handicap of inadequate armament and poor maneuverability of the M-8 Armored Car, a light tank has been provided as the major combat vehicle. Thus the platoon organization of each Reconnaissance Company was revised and now contains: a Scout Section, mounted in ¼-ton trucks; a Tank Section, mounted in M-24 light tanks; a Rifle Squad, mounted in an armored utility vehicle; a Support Squad, mounted in ¼-ton trucks with one 81mm mortar. Each platoon is, in effect, a small task force containing the common characteristics of all ground reconnaissance agencies, i.e., mobility, armor protection, heavy automatic fire power, flexible organization, and adequate multiple communications. The Reconnaissance Battalion is organized and equipped to provide security and reconnaissance for the division, execute combat missions suitable for light armored units, and operate as an armored task force when suitably reinforced.

The Armored Division is sensitive to weak bridges, minefields, poor roads and other obstacles. The Armored Engineer Battalion is the tool to overcome these obstacles. A notable addition to the Engineer Battalion is the Bridge Company which had been deleted in the reorganization of 1943. Combat experience has proven that bridging equipment must be immediately available to the division in order that frequent obstacles requiring small amounts of such equipment can be overcome with minimum delay. The Armored Engineer Battalion has further been bolstered by the addition of a lettered Engineer Company, making a total of four. Thus the present Armored Division contains a powerful Armored Engineer Unit which will greatly increase its combat effectiveness.

The service support of the division has been bolstered in the form of a Quartermaster Battalion. This battalion has been added to provide organically the means for handling and transportation of supplies (fuel, ammunition, food, clothing, etc.), bathing and laundry facilities, and the graves registration service. Specifically, the battalion is composed of a Supply Company, and a Field Service Company. The Supply Company has a Supply Platoon containing personnel to operate the Quartermaster Class I, Class II, III and IV sections; three Truck Platoons; and a Company Headquarters. The Field Service Company has a Field Service Platoon containing personnel to operate the bath, laundry, and graves registration sections; three Truck Platoons, and a Company Headquarters.

The Armored Division, combined arms team, would not be complete without air support. Organically, the division possesses 20 liaison aircraft providing elevated observation posts for directing artillery fire, gathering information as to friendly and hostile troop movements, reconnaissance, column control, and a multitude of other missions. Air support in the form of fighter bombers, reconnaissance planes and the like is a must for this division. The offensive potential of the Armored Division demands the support of the air for close support missions, column cover and distant reconnaissance to provide early information. Air-ground cooperation was developed to an amazing extent during the last war. Communications equipment and staff officers are organically provided within the division to further this teamwork.

Other changes worthy of note are: the addition of a Military Police Company, as opposed to the former Military Police Platoon; the combination of Headquarters and Headquarters Companies with the Service Company in each of the Tank and Infantry Battalions; the augmentation of the Armored Signal Company providing more efficient multiple communications means; and the addition of a Replacement Company to process divisional replacements. There are a host of minor changes in equipment and personnel which are much too detailed to mention here, but which are made as a result of lessons learned in combat to permit the Armored Division to operate more efficiently.

In summary, the Armored Division is a family of all arms and services organized and furnished in such a manner as to provide a flexible organization capable of performing violent and effective offensive combat. Under the corps and army field commanders this division is a weapon for decisive missions.

Another member of the family is the Armored Cavalry Regiment (light). Experience gained in World War II conclusively indicated that a Cavalry Group consisting of two squadrons was not correctly proportioned. Further, the Reconnaissance Troop did not lend itself to dismounted action since the bulk of the personnel were composed of crewmen. It is noted that the missions assigned to Cavalry groups in the European Theater of Operations were, in order of duration: 1. Defensive Operations; 2. Special Operations; 3. Security; 4. Offensive Operations; 5. Reconnaissance.

As a result of experience gained the Armored Cavalry Regiment (light) has been proposed to replace the Cavalry Group. This regiment includes a Headquarters and Headquarters Company and three Reconnaissance Battalions. Each Reconnaissance Battalion consists of a Headquarters and Headquarters and Service Company, three Reconnaissance Companies, a Medium Tank Company, and a Medical Detachment. The Reconnaissance Companies are organized in the same manner as similar companies in the Armored Division. This also applies to the Medium Tank Company, which is the same as the standard Armored Division Medium Tank Company.

In the present system of ground reconnaissance agencies the Armored Cavalry Regiment (light) is the largest and highest level reconnaissance organization in the field army. It is anticipated that this regiment will be provided on the basis of one per army corps performing the general mission of security and reconnaissance for the corps, considering that security and reconnaissance are interwoven and inseparable. However, the regiment is organized, equipped and trained to engage in offensive or defensive combat—mounted, dismounted, or in a combination of both. The Armored Cavalry Regiment (light) is also a team of combined arms, providing the corps commander with a convenient nucleus around which a mobile task force may be formed for the execution of special operations. Reinforcements may include artillery, engineers, heavier armor, and/or infantry.

In late 1947, Headquarters Army Ground Forces submitted a recommendation to the Department of the Army for the organization of a Tank Group. It was proposed that this group would replace the Armored Group and consist of a small Headquarters and Headquarters Company, without a service echelon, to provide supervision for the attached tank battalions and personnel for the Corps Armored Cavalry Staff Section. The combat elements of the group would consist of three tank battalions, heavy or special. The Heavy Tank Battalions are to be identical to the heavy battalions in the Armored and the Infantry Divisions. Special battalions might be equipped with flame throwing tanks, bridge carrying tanks, mine exploding tanks and the like as the situation might require and development may provide. It was not anticipated that the group would operate as a unit in combat but rather that the battalions would be attached to other combat elements of the corps as the situation might require.

With the increase in the tempo of modern warfare, and the assumption of a global aspect, it becomes apparent that overwater operations will become increasingly important. Within the amphibious team, armor is again provided as an integral part in the form of the Amphibious Tank Battalion. The primary mission of the Amphibious Tank Battalion is to form the first wave of, or furnish flank protection for, the assault landing force, and to provide initial fire support in the beachhead. The Amphibious Tank Battalion is administratively self-sufficient and is composed of a Headquarters and Headquarters and Service Company, four Amphibious Tank Companies and a Medical Detachment. Each Tank Company has as its major combat vehicle the LVT (A). This vehicle weighs approximately 20 tons, combat loaded, and its armament consists of one 75mm Howitzer and three Cal. 30 machine guns.

In conclusion, where there is a requirement for ground forces there will be a requirement for armor in some form. The infantry prefers not to enter combat without tanks to provide close support in every phase of combat; conversely armor prefers not to enter combat without infantry. The two, with artillery and engineers, and the necessary supporting services, are inseparable. This mutual respect and need facilitates the operation of the army team.

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The Combined Infantry-Armored Division*

by Colonel E. T. Conley**

OPERATIONS in World War II showed a constant desire by infantry division commanders for more armor, and by armored division commanders for more infantry. Actually each type of division was frequently reinforced with a major combat element of the other. Further, infantry divisions were frequently called upon to execute armored division missions and armored divisions were required to operate in the infantry role. Since the close of the war, reorganization in both types of divisions has reflected these wartime trends. The number of tanks organic to the new infantry division has been greatly increased while the infantry in the new armored division has been greatly strengthened.

In view of these facts, the proposal is frequently made to develop one combined type ground division, sufficiently strong in both infantry and armor to make it capable of performing the primary role of both the present type infantry and armored divisions.

The primary role of the infantry and of the armored divisions is based on current army field manuals. "The Infantry is essentially an arm of close combat. Its primary mission in the attack is to close with the enemy and destroy or capture him; in the defense to hold its position and repel the hostile attack" (FM 100-5). "The Armored Division is capable of engaging in most forms of combat, but its primary role is in offensive operations against hostile rear areas.—In general the role of the infantry divisions operating with armored divisions is to make the opportunity, and the role of the armored division is to exploit it" (FM 17-100).

This discussion is limited to the following points:

1. Assumptions made for purposes of discussion.
2. Training of the combined division.
3. Logistics involved in the combined division.
4. Operation of the combined division.
5. The principle of pooling units as it applies to the combined division.

Assumptions Made for Purposes of Discussion

There are numerous conceptions of the make-up of the combined division, particularly with respect to its strength, mobility and efficiency as compared with the present infantry and armored divisions which it would replace. Therefore, for the purpose of this discussion, certain assumptions have been made concerning fundamental characteristics. It is assumed that the combined division must retain the nine battalion infantry strength of the present infantry division and the four battalion tank strength of the present armored division. It is assumed that the combined division must retain the mobility of the present armored division. It follows as a corollary to these two assumptions that the combined division must be considerably larger than either the present infantry or armored division; and further, with our national manpower as a controlling factor, it follows that fewer of these large combined type divisions could be formed than of the smaller separate type divisions. Finally, it is assumed that no sacrifice of the best qualities which the best infantry and armored divisions displayed during World War II would be acceptable in the combined division.

Training of the Combined Division

While it is true that there is now a considerable overlap in the training requirements of the two types of divisions, it is also true that there are some radically different training requirements, principally in the field of tactics and technique. Generally the tactics and technique of one type of division are based on the proper maneuver and employment in battle of men on foot supported by all other means available, while the tactics and technique of the other are based on the proper maneuver and employment in battle of men in armored vehicles supported by all other means available. Perfection in both types of operation by the same commanders on all levels, and by the same troops would necessarily be the objective. Past experience indicates that this perfection would be most difficult to accomplish. Under the pressure of rapid mobilization and subsequent heavy replacement demands due to combat, it seems highly improbable that it could be attained.

Logistics Involved in the Combined Division

From the logistical point of view, little can be said in favor of the proposed combination. We have assumed that the plan would result in a reduction in the total number of divisions which could be organized. However, the result would be an increase rather than a decrease in the over-all amount of equipment needed.

The exact number of combined divisions that we could organize is immaterial for the purpose of this discussion. With complete mobilization, however, the total would certainly be closer to the sixty-six infantry divisions than to the sixteen armored divisions which were organized during World War II. With this in mind, the increase in the over-all amount of equipment required becomes more apparent when we consider that each combined division will have at least as many tanks as each armored division has now. In addition, each combined division will require the transportation necessary to transport its nine infantry battalions, disregarding other transportation needs. All, or at least the bulk, of this transportation must be of the armored personnel carrier type in order that the infantry can give the tanks the same type of support which armored infantry now gives them.

The only alternative to making this equipment organic to each division is to make it available in pools controlled by a higher headquarters such as Army. From an operational point of view, this is not considered a satisfactory solution. The reason for this conclusion is explained later in the discussion.

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The over-all increase in combat vehicles would place a tremendous strain on both industry, which would have to fill initial and replacement requirements, and the field services, which would have to provide the fuel, spare parts and maintenance at theater, army and division level.

OPERATION OF THE COMBINED DIVISION

From the operational point of view, the proposed combination has much merit. Flexibility in the employment of divisions by corps and army would be greatly increased. A corps commander on the defense would no longer have to decide whether to employ an armored division in the line to relieve a combat weary infantry division, or to let the infantry division remain there a while longer in order to permit retaining the armored division for a prospective offensive. A more equitable distribution of the combat load on the divisions in a corps and army would be possible.

Of equal importance, the telltale massing of armored divisions in the area of a corps or army which is so difficult to conceal, and which is such a sure indication to the enemy of what is coming, would no longer be necessary.

On the other hand, however, the larger combined division would present certain very undesirable operational characteristics.

While performing an infantry role, which experience indicates would be the case usually, a large part of the combined division would be idle. This would present to the division commander problems of equitable distribution of the combat load within the division, and of tactical disposition of a large mass of vehicles in the division area. It would present to higher commanders the problem of supporting and maintaining within the combat zone large numbers of men and large amounts of equipment which too often would take no part in combat. It would present to commanders of all levels the problem of overcoming the inertia which this idleness creates.

THE PRINCIPLES OF POOLING UNITS AS APPLIED TO THE COMBINED DIVISION

One of the most common conceptions on which the combined division is based depends on the principle of pooling. According to this principle, certain types of units are maintained in pools under a higher headquarters which assigns them to divisions as the situation demands. Pooling in principle is sound and was so proved in World War II. However, its application has very definite limits because of its effects on different types of units. As applied to the combined division it would mainly involve pooling of any or all of the following units: tank battalions, infantry battalions and transportation units, such as armored personnel companies required to carry the infantry battalions.

The pooling principle is acceptable only when applied to those units whose efficiency is not dependent upon close and intimate teamwork between the individual soldiers from the pool and the individual soldiers of the unit to which an attachment is made from the pool. Such teamwork is not necessary between the truck drivers of a truck company and the soldiers of an infantry battalion they transport. Such teamwork is not necessary between the individual soldiers of the heavier artillery battalions and the infantry soldiers they temporarily support; they rarely ever see each other. These units readily lend themselves to the pooling principle. On the other hand, the very essence of a successful tank-infantry operation (regardless of which is the supported arm) is the application of highly developed teamwork on all levels down to and including the tank crew, the infantry squad and the drivers of the armored personnel carriers. Their teamwork can be obtained only as a result of personal acquaintance and mutual confidence developed throughout the entire training period and later during combat. It cannot exist between infantry and tank units who, though similarly and equally well trained in their respective roles, are temporarily assembled from pools, and personally meet each other a few hours before the battle, or perhaps never at all.

CONCLUSION

In conclusion, an analysis of the points covered in this discussion favors the retention of the present two types of divisions. Experience in World War II has been admittedly an important factor in forming this conclusion, and therefore it is perhaps open to the criticism that it represents good hindsight, but may be lacking in foresight. But the manner in which the armored and infantry roles will be accomplished in any future war will depend to a great extent upon the types of weapons available in that war. The ability of the infantry soldier, as well as the tank itself, to survive on the battlefield of the future is being questioned currently. However, we must fight any war which may come within the next three or four years with substantially the same weapons we used during World War II. Hence, lessons learned in that war in the use of these weapons are rightly given great weight at this time.

On the other hand, we must reserve the right to change our minds. We must be continuously looking for sound reasons for change in accordance with the requirements made by new developments. A year from now—probably more but possibly less—such developments may well make the proposed combination mandatory, or on the contrary, they may make the creation of even a new type of division necessary. When these developments have been made, tested and accepted, the change necessary to accommodate them must be made promptly. For the present, the conclusion arrived at concerning this proposal appears to be sound.

The head of the Research and Evaluation Division of The Armored School gives us a general background on the evolution of Armor, its use in World War I, and the high points of the story of Armor knifing its way through World War II.

HISTORY OF ARMOR

by Lieutenant Colonel Arthur C. Harris

THE history of Armor begins with the history of man. In the dawn of recorded history, man is seen emerging from the forests with a shield on his arm which he used to ward off the rocks hurled by his enemies. When the shield alone became inadequate, he developed body armor, first of skins, then of hardened leather, quilted cloth, bronze, and iron.

As man increased his firepower he found that the weight of his weapons, armor protection, and ammunition (arrows, spears, javelins) became such that he could no longer fight effectively. As a result, an armored vehicle was developed in the form of skins stretched over a rude frame, which was mounted on a sled and pushed by a group of warriors. This early armored vehicle had very limited mobility. From the book of Judges (about 1381 B.C.) we find, "And the Lord was with Judah, and he drove out the inhabitants of the mountains, but could not drive out the inhabitants of the valley, because they had chariots of iron."

The development of armored vehicles continued with indifferent success. An effective balance of firepower, mobility, and protection was not easily achieved. Leonardo da Vinci, in 1482, designed a covered chariot operated by men turning an offset shaft similar to the crankshaft of today. In the 19th Century the use of steam for motive power was attempted, but had to be abandoned for military purposes because of the necessity of stopping every few minutes to replenish the water supply.

The development of the internal combustion engine and the endless track made possible the tank of today. The engine provided a reliable source of power, and the endless track gave cross-country mobility which wheeled vehicles could not equal. Prior to World War I, armored caterpillar vehicles were developed in Austria-Hungary and Australia, and wheeled armored vehicles in France and the United States, but the major world powers turned them down.

The United States produced the first successful caterpillar traction device; however, a Frenchman is credited with the first tank, and the British developed the first tanks that could be used on the battlefield. In 1915, Lieutenant Colonel (later Major General) E. D. Swinton of the Royal Engineers, backed by Winston Churchill, began the development of a powered combat vehicle on caterpillar tracks. Utmost secrecy was observed, and when the vehicles were shipped to France in crates, they were labeled "Tanks" to conceal the nature of their contents from the Germans. In this way, the name "Tank" was first applied to armored caterpillar tread combat vehicles.

The British efforts to preserve secrecy in order to gain tactical surprise were successful. On 15 September 1916, modern tanks were used on the battlefield for the first time. In the battle of the Somme, 15 September 1916, the British committed 49 of these new "secret weapons" divided into small groups on a broad front. Only nine of these tanks, however, fulfilled their missions. The Germans knew nothing about them, the British commanders who employed them knew little more, and no precedent or past experience existed to guide their tactical employment. Mechanical failures hampered them from the beginning. Of the 49 tanks used, 17 failed to reach the line of departure, 9 were unable to cross the line of departure, 9 were held up after crossing on account of mechanical difficulties, and 5 became stuck in the attack. Partial success was realized however, when nine fulfilled their missions. There were few casualties among the personnel.

In spite of the large percentage of mechanical failures, it was apparent that impetus was imparted to the attack by the use of Tanks. All of the contending nations immediately recognized the value of this new weapon and began building them. The French soon followed the British while the Germans salvaged captured tanks, and used them against their former possessors. The Germans developed and built tanks of their own as rapidly as they could. The American Tank Corps, created on January 26, 1917, entered its first engagement September 12, 1918, using French Tanks because American Tanks in quantity were not available before the end of the war.

Armor was first employed on a large scale on 20 November 1917 when the British used 378 tanks in their attack on Cambrai. The tanks went forward on a seven-

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mile front followed by six infantry divisions. At the end of 12 hours a penetration nearly 6 miles deep had been made, and 7,500 prisoners and 120 guns were captured. In the Third Battle of Ypres, without tanks it had required three months to make a similar advance. The Cambrai attack, however, although it penetrated deeper than any other trench warfare attack, fell short of complete success because no plans had been made for exploitation and no reserves, either tank or infantry, were available to continue the momentum which had been gained.

On 18 July 1918 in the Aisne-Marne offensive, the French Sixth and Tenth Armies employed 478 tanks in their drive on Soissons. The tank units were arranged in depth and gave added impetus to the first day's attack. They advanced as far and as fast as the infantry could follow.

The American Army employed French and American tank units with the Infantry in the reduction of the St. Mihiel salient on 12 September 1918. Objectives were reached and the salient was reduced in 36 hours.

In the Meuse-Argonne attack, begun on 26 September, the 304th American Tank Brigade, consisting of the 344th and 345th American Tank Battalions and two French Groups, was used in a supporting role. About this time, General Pershing offered "anything in the AEF for 500 additional tanks," but tanks were simply not available in sufficient numbers. The tanks that were available operated successfully. They performed their missions and reduced infantry casualties.

By the end of the war, Armor had been employed by the British, French, Germans, and Americans in a total of 91 World War I engagements.

The period between the World Wars was one of development, both of matériel and tactics. There was sharp disagreement among military men of all countries on the future employment of armor. One group maintained that the only use for tanks was in a supporting role to aid the Infantry in reaching and holding its objectives. It had been proved in World War I that tanks so employed were highly effective. Another group maintained that tanks employed in mass, taking full advantage of their mobility, could produce decisive results.

In 1935 the Italian Army used large numbers of lighr tanks in their conquest of Ethiopia. They scored striking successes, but the opposition offered by the primitive tribesmen was so weak that the operations were of little significance.

Armored forces were next employed in the Spanish Civil War which began in 1936. Germany and Italy sent tanks to Franco's aid while Russia strengthened the Republican Army with quantities of British and Christie type tanks. Tanks in Spain were generally used in small groups and as a result did not obtain decisive results. In March of 1937, 200 Italian tanks started for Guadalajava as part of a larger force. The tanks soon outdistanced the Infantry and Artillery, and were spotted by enemy aviation. They were helpless against the resulting air attack. Before the Infantry and Artillery could come to their aid, they were almost completely annihilated.

It was the German Army which first showed the world what Armor could do in modern battle. They were the first to demonstrate the effectiveness of masses of tanks supported by mobile Infantry, Artillery, and Aviation. On 1 September 1939 the German Army invaded Poland. Fourteen Panzer Divisions spearheaded the drive and within a week the Nazis were attacking Warsaw and by the end of the month Poland had capitulated. The world was amazed at the devastating power and speed with which the German blitzkrieg had unfolded. But this was only the beginning. Even more startling events were in store for the French and British Armies in France.

On 10 May 1940 the German forces struck to the west and south. A three-pronged armored drive through the Ardennes Forest in southern Belgium crossed the Meuse River on 13 May. The German armor raced 220 miles to the English Channel in 11 days, cutting the Allied Armies in two. The British forces were evacuated by sea from Dunkirk. Belgium was forced to surrender. Without halting, the German armored columns turned south, fanning out as they advanced, dividing the French resistance and overwhelming it. On 12 June France surrendered.

In World War I Germany had succeeded in penetrating the French defenses, but failed to attain a decision because means of exploiting the successes were lacking. In World War II German armor furnished the sustained drive which was needed. The basic plans for both attacks on France were essentially the same.

Armor had come of age. In ten months the German Army had waged three victorious campaigns. In about ninety days of actual fighting it had defeated six countries, two of them with armies considered the best in Europe. The nations of the world were now fully aware of the power inherent in Armor when it was employed in mass in conjunction with mobile supporting arms. The United States, fast becoming "the arsenal of democracy," began building tanks which were to prove their worth on the battlefields the world over. In July 1940 the Armored Force was organized at Fort Knox, Kentucky, and the organization and training of American armored divisions began.

The scene of armored combat shifted to the desert of North Africa. Italian forces planned to attack the British in Egypt from two directions. Graziani began an eastward advance from Libya on September 13 while another Italian Army started north from Ethiopia. General Wavell, the British commander, left two Infantry Divisions to delay the advance from the south while the main force surprised the Italians at Sidi Barrani, 60 miles inside Egypt. British armor, supported by Infantry, drove the Italians westward. A tank column with motorized infantry crossed the desert from the south to strike the retiring Italians from the rear. The Italian Army was cut off east of Bengasi and destroyed. Over 130,000 prisoners were captured at a cost of 1800 casualties. On 8 February 1941 the British occupied Cyrenaica and the eastern half of Libya as far as El Agheila.

The British drive stopped at El Agheila because troops were needed in Greece and the Italian threat from the south had to be halted. With his army depleted by the reinforcements sent to Greece, Wavell attacked a superior Italian Army in Ethiopia from three directions. The main attack was made by an armored force which covered 1,725 miles in fifty-three days and took Addis Ababa. On 19 May 1941 Italian resistance ended and the British southern flank was secure.

While the British Army was being driven out of Greece by the German armored spearheads a new threat developed in North Africa.

In March, Field Marshal Rommel arrived in Africa with the 15th Panzer, 21st Panzer, and 90th Light Infantry Divisions, to form the Afrika Korps. In support were seven Italian divisions, one armored and six infantry. The superior Axis force quickly drove the two remaining British Divisions back to the Egyptian border.

After the Greek debacle the British began in July to build up their forces in Africa. The Eighth Army was formed, consisting of one armoured (the 7th) and four Infantry Divisions.

On 17 November 1941 the new British Army began an attack with a wide end run around the south of the German positions. At first they made the mistake of dispersing their armored strength, which permitted Rommel to defeat three tank brigades in detail. The German tank guns outranged the British. When they concentrated their tanks they won. Realizing this advantage, Rommel with one hundred tanks cut up the British rear and drove into Egypt. The German force itself was so badly cut up in the action that it had to retire to El Agheila. Both sides settled down to repair their losses (28 January 1942).

When the European Continent had been cleared of opposition by the Campaign in Greece, the German General Staff prepared to take on a new opponent. The Nazis invaded Russia on 22 June 1941 with 180 divisions, 20 of which were panzer. The main drive on Moscow set the pattern for the German offensive along an 1,800-mile front from the Arctic Ocean to the Black Sea. In this drive, Marshal Bock sent two Panzer Armies racing ahead of his infantry in a double envelop-of Bialystok, which they surrounded. When the infantry came forward to complete the destruction of the encircled Russians, motorized forces with armored spearheads disengaged and went on to envelop Minsk.

These tactics were repeated by the Germans against stubborn resistance along the entire front. By the end of 1941 the Germans occupied a broad strip of Western Russia over 500 miles wide. The Russians traded space for time, built up their armies and increased their armored strength with equipment furnished by the Western Powers. The war in Russia continued without either side being able to gain a decision until the landings in Normandy. By that time the diversion of German forces to the west made possible the Russian drive into Germany which ended on VE Day.

When Japan attacked Pearl Harbor on 7 December 1941, the United States entered the war. Armor did not figure prominently in the war in the Pacific, but nevertheless did play its part in the defeat of Japan. Separate tank battalions played important supporting roles from the start. In the Philippine Islands Campaign of 1941-42, the 192d and 194th Tank Battalions fought notable roles in the defense of critical points, covered the withdrawal to Bataan on wide fronts and aided materially in the final defense. The first infantry to ride American tanks in an attack were primitive headhunters from Northern Luzon who counterattacked the Japanese in Bataan. American armor operated in most of the campaigns in the Pacific, making amphibious landings in the Western Pacific, New Guinea, Southern Philippine, and Luzon campaigns.

On 26 May 1942 the lull in North Africa ended. Rommel launched his offensive first and on 13 June trapped the British Armor at Knightsbridge, destroying all but 70 of 300 tanks. The Eighth Army, badly battered, withdrew and prepared for a last stand at El Alamein, only seventy-five miles from Alexandria. Fortunately for the British, the Afrika Korps was too short of water and supplies to break through. The arrival through Suez of tanks, planes, and supplies from the United States helped the British build up their defense. General Montgomery took command of the Eighth Army, and with the aid of the war materials coming in, prepared for a new offensive.

On 31 October 1942, after a heavy artillery preparation, Montgomery launched his attack in the final battle of El Alamein. Four infantry divisions, supported by tanks, penetrated the northern sector, cleared the minefields, and opened two tank lanes. The 1st and 10th Armoured Divisions followed through and continued the attack while the 7th Armored Division on the south, contained the 21st Panzer Division. The British had broken into, but not through, the German defenses on the north. When Rommel concentrated his tanks in the north the British 7th Armoured also moved north and with the 1st and 10th, split the Axis armor, cut up the German rear, and on the 2nd and 3rd of November destroyed 260 enemy tanks. The Eighth Army poured westward in pursuit of the battered Afrika Korps. Rommel withdrew the remnants of his army so rapidly that the British could not catch him. Heavy rains and minefields delayed the pursuit. They did not catch up until 18 February 1943 along the old French Mareth Line, over 1100 miles west of El Alamein.

On 8 November 1942, as the pursuit of the Afrika Korps was gaining momentum, American armored divisions first appeared in action. The 2d Armored landed on the west coast, north and south of Casablanca, while the 1st landed east and west of Oran. After token opposition the French capitulated and joined the Allies.

Within two weeks of the landings the Americans and British—who had debarked at Algiers—were racing eastward in an effort to get to Tunisia and catch Rommel from the rear. German reinforcements from Europe arrived in the nick of time and stopped the advance in the mountains of western Tunisia. The cold, rainy winter slowed down operations. The German were penned in northeastern Tunisia by the British Eighth Army on the south and the combined British-French-American First Army on the west. Rommel attempted to break out with a powerful armored thrust through Kasserine Pass, but had to withdraw when British and American armor, supported by two infantry divisions, succeeded in stopping him after four days of hard fighting.

While the American 1st Armored Division threatened the German rear in the vicinity of Maknassy, Montgomery pinned them down, and, delivering a left hook, drove northward. When the Nazis abandoned their positions, British armor kept on their heels. The final Allied drive to clear North Africa was launched on 23 April. The American II Corps on the east, fighting an infantry battle for 10 days, advanced 15 to 18 miles and set the stage for the final effort. With infantry pressing forward on the right and left, the 1st Armored Division drove through with two spearheads to the north and east. At the same time, a crushing tank attack by the British resulted in the capture of Tunis on 7 May. The British 7th Armoured cornered the 15th Panzer Division north of Tunis and the 6th Armoured made a night drive, which cut off the German retreat into the Cape Bon Peninsula. The speed and power of the Allied armor had cut up the German forces before they could form for a protracted defense. On 8 May Bizerte was cleared by American armor. On the 12th the Axis forces in Africa surrendered. After a two-month preparation the Allies struck again. On 10 July 1943, landings were made on the southern coast of Sicily. Combat Command "A" of the 2d Armored Division landed with the 3d Infantry Division and before dark the rest of the division was ashore. Remaining elements of the division landed with the 1st Infantry Division at Gela and drove off German tank attacks at Gela and Niscemi and supported the infantry attacks until 16 July when the division assembled at Campobello in 7th Army reserve. On 22 July the 2d Armored drove 60 miles across the island in ten hours and captured Palermo. The armored job was done in Sicily.

When the Allied landings were made in Italy at Salerno, separate tank battalions landed with the infantry to assist in the establishment of the beachhead. When the infantry on the left advanced to suitable attack positions, the British 7th Armoured Division with the 23rd Armoured Brigade broke through, spearheading the attack through Naples to the Volturno River on its left, and then crossed the river to drive north along the coast to the Garigliano River.

At Anzio elements of the U. S. 1st Armored Division were used to strengthen the defense and counterattack German penetrations. The division broke out of the beachhead on 23 May 1944, driving through Rome to the north. The end of the war in Europe found the 1st Armored driving at will through the Po Valley.

On D-Day, 6 June 1944, elements of the 741st and 743d Tank Battalions rolled ashore with the first wave at Omaha Beach to begin the battle for the beaches. This was likewise true of the 70th Tank Battalion at Utah Beach. By dark the 745th, 746th, and 747th Tank Battalions were also ashore. Separate tank battalions played a supporting role in the initial stages of the Normandy landings. The task of the separate tank battalions was to assist the infantry to drive forward and secure positions from which the Armored Divisions could exploit their successes. General Eisenhower, in his report, said, ". . . the comparatively light casualties . . . were in large measure due to . . . the staggering moral and material effect of the mass of armor landed in the leading waves of the assault."

On 10 June the 2d Armored Division began its landings and elements were used to support the infantry attacks which were enlarging the beachhead. When the 3d Armored landed, it also committed its units in a supporting role. The constant, unremitting pressure of the Allied infantry divisions supported by armor prevented the Germans from forming an armored reserve. Every time the enemy attempted to replace armor in the line with a newly arrived infantry division, a fresh Allied attack necessitated its hasty recommittal.

On 19 July the British Second Army in the vicinity of Caen made its first strong armored thrust. At dawn a heavy concentrated air assault was made on the German positions. As the last plane dropped its bombs, the British VIII Corps with the 7th, 11th and Guards Armoured Divisions struck south, clearing Caen and driving on against the bulk of the German armor. By dark the Germans succeeded in establishing a strong antitank screen which stopped the attack. Although a breakthrough had not been achieved, the British did contain large German forces which aided in setting the stage for the American breakthrough.

On the 24th of July, American forces were ready and poised for operation COBRA. Previous to this, the infantry, supported by tanks of the separate tank battalions and the 2d and 3d Armored Divisions had made a steady, costly advance through the hedgerows of Normandy to a line which ran northwest and southeast from St. Lo.

The plan for operation COBRA was as follows: The British forces on the left were to maintain constant pressure in order to contain as many German units as possible and prevent their movement to the First U. S. Army front. VII Corps, in the center of the First Army, was to attack with three infantry divisions, who in turn would be passed through by the 2d and 3d Armored Divisions, followed by the 1st Infantry Division, motorized for the operation. XIX Corps on the left would launch its attack at the same time to cover the flank of the drive and VIII Corps was to attack a day later.

On the morning of 25 July, the Allied air force delivered one of the heaviest bombing attacks of the war on the German positions in front of the VII Corps. When the last bomb had dropped, the 4th, 9th and 30th Infantry Divisions, with tank battalions attached, attacked and drove through the weakened enemy positions for a gain of nearly two miles. The German positions were definitely broken. While the infantry divisions held the shoulders, the 2d and 3d Armored Divisions drove through on the following morning. By dark they had pushed 4 miles farther south beyond Canisy. The attack was gaining speed. On the 27th, the VIII Corps on the west flank continued its infantry attack, gaining as much as three miles. While the VIII Corps armor was waiting its turn, the 2d Armored of VII Corps continued its advance, gaining another 6 miles.

On 28 July, in the VIII Corps Zone, the 4th and 6th Armored Divisions drove through the infantry down the roads which converge on Coutances. By dark the 4th had captured Coutances and advanced a mile beyond the town, while the 6th had reached a point three miles to the southwest. In the VII Corps Zone, the 2d and 3d continued south and southwest. Infantry mopped up in the rear. Four American Armored Divisions abreast were now spearheading the breakthrough of the First Army. The enemy withdrawal of nine infantry, two parachute, one panzer grenadier, and two panzer divisions was degenerating into a disorderly retreat.

The 6th Armored stopped to liberate Granville on the coast while the 4th continued on toward Avranches. By the end of July, the 4th Armored had liberated Avranches, seized the important crossings of the Selune River, and was in a position to enter the Brittany Peninsula. The 6th Armored was west of Avranches, and the 2d and 3d were echeloned to the left rear.

The breakout had been accomplished and fresh Allied units continued to stream across the Normandy beaches. On the 1st of August, the Third U. S. Army became operational, taking over the right portion of the American sector. The drive which was begun at St. Lo was to continue without letup until the Allied Armies stood on the German border.

Meanwhile, what of the other Armies? The British Second and Canadian First Armies continued their slow advance against the stubborn resistance of the German Seventh Army which was strong in Armor. The American Third Army began exploitation to the south, with the American First Army protecting its communications. The First Army had gradually changed its direction of attack to the southeast. By the night of the 6th, the 3d Armored had swept on south and southeast to Mayenne.

The German Seventh Army had finally succeeded in massing four Panzer Divisions with fresh infantry support for a drive through Mortain to the sea at Avranches. It was expected that this attack would cut the supply lines of Third Army and also elements of the First Army. Thus the Germans hoped by this drive to stop the Allied advance and cut up the Third Army from the rear.

The attack struck the 30th Infantry Division of First Army at Mortain. When Mortain was taken, Combat Command "B" of the 3d Armored was moved to the north flank of the 30th Infantry. The 2d Armored Division moved into the area and assisted in the defense. For four days, the American forces beat off the repeated Panzer attacks, holding the Germans to a three-mile gain. Finally, on the 12th, the Germans had to admit failure, and Mortain was retaken.

The successful defensive action of the 30th Infantry Division with supporting armor at Mortain permitted the First Army to continue its eastward drive when the Germans attacked at Mortain. The 3d Armored Division spearheaded around the German south flank and drove north toward Falaise. At the same time the 4th Canadian Armoured, with the Polish Armoured Division, pushed south and east of Falaise. The Germans, realizing the danger of being encircled, concentrated all available armor in a futile attempt to prevent a junction of the two forces. On 19 August, the Polish Armoured Division met American tanks northeast of Argentan, trapping the remnants of the German Seventh Army. Three days later what was left of seven German Infantry Divisions and elements of three Panzer Divisions surrendered.

Going back to the 1st of August, and the spectacular operations of the Third U. S. Army, we find that resistance on the Third Army front was much lighter than in the north. On the first of August, the 4th and 6th Armored Divisions drove south of Avranches to open a wide corridor into Brittany. The 6th Armored Division swung west toward Brest and the 4th Armored on its left drove south 40 miles to Rennes. By the 10th of August, the 4th Armored had driven another 70 miles to capture Nantes and cut off the Brest peninsula; it then turned west and drove the scattered German units into Lorient. When the 6th Armored reached the western tip of Brittany, the only Nazi forces left in the province were the garrisons at St. Malo, Brest, and Lorient.

Other Third Army spearheads, the 5th Armored and 2nd French Armored drove around the south flank of First Army and assisted in closing the Falaise Pocket. While the First Army was fighting to trap the Germans at Falaise, the Third Army, taking full advantage of the weaker resistance in its zone, pushed its Armored Divisions eastward. The 4th Armored Division on the extreme right flank in the XII Corps Zone drove 500 miles to the Moselle River before it was temporarily stopped because of gasoline shortage in the vicinity of Nancy. The 7th Armoured Division in the 20th Corps Zone drove to Metz. Later the 4th Armored Division circled Nancy causing the first break in the historical western line of defensive cities.

While the armor of Third Army was sweeping across France, the Seventh Army landed on 15 August on the Mediterranean Coast and sent its spearhead, the 1st

French Armored Division up the Rhone River Valley. Driving through Lyon and Dijon, it linked up with the Third Army north of Chaumont on 11 September.

On the north flank, the British and Canadian armor were not idle. Five armored divisions spearheaded the drive along the channel coast to the border of Holland. The British 11th Armored swept north 195 miles in less than four days to capture Antwerp.

As the Third Army drove east and the British north, the First Army between them sent the 2nd French Armored to liberate Paris. The American 2d Armored crossed the Seine River north of the city, and the 3d Armored crossed to the south, setting the stage for the drive from the Seine to the northeast by the 2d, 3d, and 5th Armored Divisions. After advancing to Mons, over 150 miles in eight days, the 3d Armored fought a most unusual battle. The 3d Armored had liberated Mons and was waiting for the 1st Infantry Division to catch up. An estimated 30,000 German troops, elements of the Seventh Army, were retreating along a route to the west and parallel with the advance of the 3d Armored Division. The column turned east, headed for the Siegfried Line, and ran into the 3d. For three days the Americans had a field day. The 3d Armored, cut off on all sides, captured 8,000 prisoners from ten divisions. This battle was not over until the 1st Infantry reached Mons to relieve the 3d Armored and the infantry completed the roundup, allowing the Armor to drive on to the east. The Siegfried line defenses were weakened in this battle by the loss of over 25,000 captured, thousands killed, and the loss of large quantities of matériel and vehicles. The 3d Armored, by getting to Mons first had cut off the forces which might have slowed their eastward advance. On 12 September, the 3d and 5th Armored Divisions of First Army were on the German border. In two weeks' time they had driven from the Seine River to Germany, liberating Luxembourg, Liege, Sedan, and many smaller cities and towns.

While the Third and Seventh Armies were closing on the Moselle River and the First on the German border, the British and Canadian Armor drove north into Holland, liberating Brussels, Antwerp, and Ghent. The Airborne attempt to seize crossings over the Waal and Lower Rhine Rivers failed and the pace of operations slowed down. The Allied Armies had outstripped their supplies and had to curtail their operations.

Armor had its next test on the snow-covered hills of the Ardennes Forest when the Fifth Panzer, Sixth Panzer, and Seventh German Armies with seven Panzer Divisions burst through the thinly held American First Army lines. The German plan was to overwhelm the Allied defenses and drive through to Antwerp with their massed armor. The attack jumped off the morning of 16 December, and within 24 hours had cut the American defenses to ribbons.

The story of Armor in the Ardennes Bulge can be divided into three phases. First, the German fight for communications; second, halting the penetration; and, third, the reduction of the salient.

Two key road junctions were vital to the German plan. In order to supply their armor and insure the momentum of the attack, the German forces had to secure St. Vith and Bastogne. The Allied possession of Bastogne, gallantly held by the 101st Airborne Division, was assured when the 4th Armored Division drove from Arlon, through German holding forces, to reestablish the supply line of the beleaguered defenders. To the north, at St. Vith, the American situation was more critical. The 7th Armored Division was ordered to St. Vith from Holland to assist in the defense. Combat Command "B" arrived at St. Vith to find the situation almost hopeless. Only small fragments of the 106th Infantry Division were left and the enemy was but a few miles away. For six or seven days the 7th Armored assisted by Combat Command "B" of the 9th Armored and the remnants of the 106th and 28th Divisions, cut off from all sides, fought off the German attacks. The 82d Airborne Division, and 30th Infantry Division, advanced to within 20 miles of St. Vith, but did not move forward to establish contact with its defenders. After holding St. Vith against attacks by five Panzer and three Infantry Divisions, the 7th Armored was ordered to withdraw on 23 December. The defense of St. Vith had slowed down the German timetable long enough for the Allied Armies to regroup for the next phase of the Ardennes campaign.

To the south, the 101st Airborne Division with a part of the 9th Armored Division held out at Bastogne until their siege was lifted by the 4th Armored Division.

The 2d Armored Division halted the German drive farther to the west. After being relieved from its positions in the vicinity of Aachen, it immediately moved southwest to the vicinity of Dinant, Belgium to intercept the Panzer spearhead. The 2d Panzer Division was stopped within four miles of the Meuse at Celles, and, after a four-day battle, destroyed by the 2d Armored. The 2d Armored had driven south to encircle the 2d Panzer, and then proceeded to destroy it, at the same time blocking the attempt of other Panzer elements to break through.

By the time the 2d Panzer was mopped up on the 26th of December, the force of the German thrust had been expended and the Americans began operations to regain the ground they had lost.

The reduction of the salient was begun early in January 1945, the 6th, 9th, and 11th Armored Divisions drove steadily north and east from the vicinity of Bastogne against determined resistance, while the 2d and 3d advanced steadily southward to meet them. On the 16th, the 2d Armored contacted the 11th Armored in the vicinity of Houffalize and over half of the salient was reduced. On 23 January the 7th Armored recaptured St. Vith, the town it had stubbornly defended against overwhelming odds. When the 6th Armored reached the German border the campaign was over and the Allies could continue with their interrupted plans.

The next operation on the Allied schedule was to close on the Rhine in preparation for the final drive into the heart of Germany. It was planned to begin the operation on the north flank, the Armies to close successively toward the south.

On the Allied northern flank, the British and Canadian Infantry launched an attack on 8 February from the vicinity of Nijmegen to the southeast. After a slow ten-day advance over flooded and water-soaked ground the 4th Canadian and 11th British Armoured Divisions drove through slowly toward Wesel. Shortly after this, on the 23rd of February, Ninth Army crossed the Roer northeast of Aachen, securing the bridgehead with infantry supported by separate tank battalions, enabling the 2d, 5th, and 8th Armored Divisions to pass through and drive northeast. The 2d Armored led, driving to the Rhine on the right flank, then turned north along the river, clearing the banks of resistance as it went. The 5th Armored spearheaded in the center and the 8th Armored with the 35th and 75th Infantry Divisions cleared the last resistance west of the Rhine at Rheinberg.

The First Army crossed the Roer on the right of the Ninth three days later. Its mission was to protect the right flank of the Ninth Army, then turn south to clear the Cologne Plain and, finally, to link up with Third Army from the south. The 3d Armored in the left of the Army zone swept from the Roer in the vicinity of Duren across the Cologne plain and entered Cologne on the 5th of March.

The 9th Armored Division drove rapidly through the German elements to the town of Remagen, on the bank of the Rhine, where on 7 March it scored one of the most striking successes of the war. The Allied Forces hoped, but did not expect, to seize a bridge over the Rhine before it was destroyed. When the leading elements of the division crossed the hill overlooking the town they saw the Ludendorff Bridge still intact, carrying German vehicles and troops across the bridge. The 14th Tank Battalion and 27th Armored Infantry Battalion of the 9th Armored drove through Remagen and had advance elements across the bridge before the surprised enemy could react. The Division, and later the III Corps immediately sent reinforcements in to the bridgehead which was graduallv expanded against stiffening resistance. The speed of the armored drive, combined with the initiative and aggressive spirit displayed by the troops from the private up to the Corps Commander had resulted in a success which was to have a profound influence on subsequent operations.

After eliminating the resistance in the Saar-Moselle triangle, the Third Army sent its 11th and 4th Armored spearheads eastward. The 11th Armored broke through north of Kyllburg on the 7th of March. Advancing northeast with increasing rapidity, it reached the Rhine at Andernach on March 9th and linked up with the First Army. The 4th Armored Division on its right drove 70 miles in 58 hours to reach the river, and sweep southeast another 70 miles to clear the banks and meet the Seventh Army coming from the south.

After the 12th American and 1st French Armored Divisions closed the Colmar Pocket on 5 Februarv, the scene of action on the south shifted to the 7th Army, which on 15 March attacked north through the Siegfried Line toward the Rhine. The 6th and 14th Armored Divisions of Seventh Army pushed north while the 4th and 11th of 3d Army drove south to meet them. The two armies met along the Rhine encircling the German defenders to the west, who were cut to pieces by the 10th and 12th Armored Divisions in their advance to the river. The envelopment by the two armies had decimated the German First and Seventh Armies, captured over 81,000 prisoners and cleared the western bank of the Rhine south to Speyer. The operation was completed and on the morning of 23 March the Third Army successfully made a surprise crossing of the Rhine opposite Darmstadt.

Having closed to the Rhine, the Allies prepared for the final campaign. The seizure of the bridgehead had forced the Germans to weaken their other defenses in order to contain the thrust at Remagen. This weakening of their defenses made possible the Third Army surprise crossing and reduced the resistance against the main effort on the north. The greatest German strength, however, was still concentrated north of the Ruhr. The plan was to force a crossing at Wesel, isolate the Ruhr industrial area, and drive eastward.

On the night of 23 March the crossings were successfully initiated by the British Second Army and the American Ninth Army on its right. The 8th Armored Division crossed into the bridgehead and on the 28th began a steady attack against stubborn resistance of the 116th Panzer Division. The 2d and 5th Armored Divisions drove past the Ruhr. When the 2d Armored contacted the 3d at Lippstadt, the 8th disengaged and moved around the north to Lippstadt and drove westward to reduce the pocket. As the 8th disengaged so did the 116th Panzer which moved eastward to go into an assembly area preparatory to an attempt to break out. The 8th Armored, after moving twice the distance the 116th Panzer had to move, entered the German assembly area first, defeated the Panzer units in detail and forestalled the attempt to break out.

While the Ninth Army was securing its bridgehead, the First Army broke out and started eastward. On 25 March, the 3d Armored Division attacked, sweeping east and north to Lippstadt where it contacted the 2d Armored on 1 April, and closed the Ruhr pocket, after a 75-mile drive in one day.

With the Rhine crossed all along the front, the Allied Armored Divisions ran wild. British armor drove across the north German plain through Bremen and Hamburg, and with the American 7th Armored, crossed the Elbe and drove to the Baltic. In central Germany, the American armored divisions drove eastward on a sightseeing tour. The 5th exploited to the Elbe, the 2d crossed the Elbe south of Magdeburg. The 4th, 6th, and 9th advanced to the vicinity of Chemnitz, then moved south and penetrated Czechoslovakia for an average of 40 miles. The 16th Armored pushed from the German border to take Pilsen and the 11th advanced halfway to Vienna from the Austrian border, with the 13th paralleling it on the right. In the Seventh Army zone, the 10th Armored, after breaking out of an encirclement at Crailsheim, drove southeast with the 12th Armored on its left into the Nazi Redoubt of southern Austria. The 20th Armored advanced through Munich to Salzburg, Austria. The French 1st and 5th Armored Divisions moved north of the Swiss border into Austria.

When the armies of the Western Powers had reached the line agreed on with Russia, they halted and waited for the Russian Forces. Resistance in Europe ended when junction was made with the Russians along the Elbe, in Czechoslovakia and in Austria.

Immediately after the cessation of hostilities in Europe, plans were put into effect to move two American armored divisions to the Pacific for the invasion of Japan, but the early capitulation of the Japanese Empire made the move unnecessary.

In the Pacific the separate tank battalions participated in many of the amphibious assault landings, including Leyte, Luzon, and Iwo Jima. On Luzon the 44th, 716th, 754th, and 775th Tank Battalions supported the Infantry attacks and helped liquidate the Japanese 2d Armored Division. The Japanese 2d Armored Division was employed in a piecemeal fashion, never committing more than 16 tanks in an attack. As a result of this piecemeal employment, the only armored division in the Pacific was ineffective.

At the end of World War II, armor was recognized as one of the major combat arms. Developed and first used by the Allies in World War I, tanks showed promise of being able to restore war of movement. The development period between the world wars resulted in technical improvement, but the most effective tactical use was still in doubt. The astounding successes of the German Panzer units in the early days of the Second World War caused the world to wonder if armor by itself, with supporting air forces, could not win. The campaigns in Africa showed that armor alone was not sufficient. Tanks required infantry, as well as air-support.

When the Allies invaded Europe and started on the long road to Tokyo, a doctrine of employment, learned from the Germans and tested in North Africa, had been forged. On all the fronts tank battalions supporting the infantry proved that they could ably support its advance, render effective assistance in amphibious landings, reduce its casualties, prevent a stalemate and actively assist in defensive situations. In the European Theater, armor employed in mass proved to be the most effective instrument with which to exploit successes to the utmost.

It might well be said that armor is the weapon of decision. Few decisive victories were gained in World War II in which armor did not play a substantial part.

Recent Books: The Yale Institute of International Studies

THE LATIN AMERICAN POLICY OF THE UNITED STATES. By Samuel Flagg Bemis

THE ABSOLUTE WEAPON: Atomic Power and World Order. By Bernard Brodie

BRITAIN: PARTNER FOR PEACE. By Percy E. Corbett

A NAVY SECOND TO NONE. By George T. Davis

THE SUPER-POWERS. By William T. R. Fox

THE FAR EASTERN POLICY OF THE UNITED STATES. By A. Whitney Griswold

THE MEDITERRANEAN: Its Role in America's Foreign Policy. By William Reitzel

CHINA AMONG THE POWERS. By David Nelson Rowe

AMERICA'S STRATEGY IN WORLD POLITICS. By Nicholas John Spykman

THE GEOGRAPHY OF THE PEACE. By Nicholas John Spykman

BRITAIN AND FRANCE BETWEEN TWO WARS. By Arnold Wolfers

Order from the Book Department *The Armored Cavalry Journal*

Armor In The National Guard

A part of the postwar National Guard's new look is its "breakthrough arm," the two armored divisions which give a highly mobile and heavily armed striking force to the offensive power of the new National Guard. Together with the twenty-five infantry divisions, they comprise the Guard's divisional team, which reveals a decided contrast to the prewar Guard of only eighteen infantry and no armored divisions. This, of course, was due to the recognition of the important role played by armored units in the Allied victory.

These National Guard armored divisions are the 49th of Texas, commanded by Major General Albert Sidney Johnson, and the 50th of New Jersey commanded by Major General Clifford Ross Powell. Each has a total allotment of 91 component units and an authorized National Guard strength (100 per cent officers, 80 per cent enlisted men) of 8,831 officers and men. On June 1st the 50th Armored Division had a total strength of 4,143 and division organization was complete with the exception of two medical detachments. The 49th Armored Division had 3,097 men and 67 units Federally recognized.

The 49th Armored Division was activated on the 27th of February in 1947. Nucleus units were the 56th Cavalry Brigade and the 144th Infantry Regiment, a unit left an orphan when the 36th Division was triangularized. The combat commands of the 49th are commanded by men whose military careers go back to the First World War, with combat experience in both world conflicts. They are Brigadier General John W. Naylor of Fort Worth, Commanding CCA; Brigadier General Clayton P. Kerr of Dallas, Commanding CCB; and Colonel Gaston S. Howard of Longview, Commanding CCR.

General Johnson, lawyer, oil man, utility company president, entered military life in August of 1917 via the first Officers' Training Camp at Leon Springs, Texas, and served with the 90th Division through combat in France and the occupation of Germany. He joined the 56th Cavalry Brigade as a captain in 1921 and served with it until 1941. He was a staff officer in the 6th Armored Division and the 2nd Armored Corps until August of 1944 and Inspector General of the China Theater until February 1946.

The 49th Armored is fortunate in its situation near Camp Hood, where it holds a close association to the Regular establishment and has available the facilities of one of the outstanding military reservations in the country. It is here that the 49th will hold its summer field training. The Regular Army's Second Armored Division at Camp Hood has been especially cooperative and has "greatly facilitated the 49th's progress," according to General Johnson. When extensive Army-Air problems were held at Camp Hood in May, some 200 officers of the 49th attended as observers and were given full freedom of the training area. The division staff participated in Exercise CACTUS at Fort Sam Houston, involving all divisions in the Fourth Army and at the final CPX at Fort Sam some thirty members of the division staff were present. In addition, the 49th has taken full advantage of service schools. Since activation 40 officers and 117 enlisted men have attended the Command and General Staff College, The Infantry School, The Artillery School, and, of course, The Armored School.

Lack of armories constitutes one of the fundamental training problems. There are no state-owned armories in the division setup. The three battalions respectively centered in Dallas, Fort Worth and Houston have excellent Federal facilities available, but in the smaller communities units are using public school for armories and the county jails as supply rooms.

The 50th Armored Division of New Jersey was activated in August of 1946, when headquarters were opened in Newark and recruiting got under way. By the end of 1946 a total of 22 of the division's units had been organized with a total strength of 167 officers and 406 enlisted men. During the following year 24 units were organized and the personnel strength reached 258 officers and 1,233 enlisted men.

As of the first of June of this year, following extensive recruiting campaigns, the total division strength was 4,143 officers and men, and only two medical detachments were needed to complete the total divisional organization.

New Jersey's heavily populated area has somewhat restricted the use of armored vehicles. Traffic conditions hamper the use of roads. The majority of the state armories have wooden drill floors, thus requiring outdoor vehicle training classes.

Major General Clifford Ross Powell, Commanding General of the 50th Armored Division, has been a member of the New Jersey National Guard almost without interruption since February of 1913, when he enlisted in the 3rd Infantry. He served as a lieutenant with the 29th Division in World War I, and participated in a number of missions as an observer-bombardier while on detached service with the French Ninth Bombardment Group. He was severely wounded in combat.

During the last war General Powell served as Commanding General of the 44th Infantry Division. He also served as Psychological Warfare Officer of the 12th Army Group during the European campaigns, and as Deputy Director, Information Control Division, USFET, in the Army of Occupation in Germany until 1946.

In command of Combat Command "B" of the 50th Armored Division is Brigadier General Donald W. McGowan, who is a member of the Executive Council of the Armored Cavalry Association.

The United States Army Equestrian Team

Many readers of the Journal will be interested in the results obtained by the Prize of Nations section (a difficult jump group) by the United States Army Equestrian Team in its first international contest in Europe; this section consists of:

Colonel F. F. Wing   Lieutenant Colonel Kayser
Captain John Russell   Lieutenant Colonel Symroski

This competition was held at Lucerne, Switzerland from June 12th to June 20th. Our team competed against those of Mexico, Italy, Switzerland, Great Britain and Ireland. The greatest competition was received from the Mexican team which had just competed at Rome and Montecatini where they won almost every class against most of the nations showing at Lucerne, including a team from France.

The courses at Lucerne are typical of those found throughout Europe and in general are about one-half mile in length with all types of obstacles, from 4½ ft. to 5½ ft. The last time the United States Equestrian Team competed at Lucerne was in 1936 just prior to the Olympic games in Berlin. While that team did well, its performance could not compare with that of the 1948 team, which won ten out of twelve first places, the other two first places going to Mexico. The following are the results at Lucerne:

Prize of Burgenstock

1. U.S.	Capt. Russell	on Rattler
2. U.S.	Col. Frierson	on Rattler
3. Italy		
4. Italy		

(Three other places to U.S.)

Prize of St. George

1. U.S.	Capt. Russell	on Blue Devil
2. U.S.	Capt. Russell	on Rattler
3. U.S.	Col. Wing	on Totilla
4. Switzerland		

(Four other places to U.S.)

Grand Military Prize

1. U.S.	Lt. Col. Symroski	on Swizzlestick
2. U.S.	Col. Frierson	on Rascal
3. Mexico		
4. Mexico		

(One other place to U.S.)

Prize of the Lake of Lucerne

1. U.S.	Lt. Col. Symroski	on Swizzlestick
2. Great Britain		

(Three other places to U.S.)

Individual Championship in Prize of Nations

1. U.S.	Capt. Russell	on Air Mail
2. Mexico		

Prize of St. Gotthard

1. U.S. Team	Col. Wing	on Riem
2. Great Britain	Lt. Col. Symroski	on Roll On
3. Italy	Capt. Russell	on Blue Devil

Prize of the Irish Army

1. U.S.	Col. Frierson	on Rascal
2. U.S.	Capt. Russell	on Air Mail
3. Mexico		
4. Italy		

(Two other places to U.S.)

Prize of Meggenhorn

1. U.S.	Lt. Col. Kayser	on Dagmar
2. Mexico		
3. U.S.	Capt. Russell	on Rattler

(Two other places to U.S.)

Prize of Nations

1. U.S.	Col. Wing Capt. Russell Col. Frierson	on Democrat on Air Mail on Rascal
2. Mexico		
3. Great Britain		

Prize of Pilatus

1. Mexico
2. Mexico
3. Italy

(U.S. had sixth place)

Prize of Lido

1. U.S.	Capt. Russell	on Blue Devil
2. Great Britain		
3. U.S.	Col. Wing	on Riem

(Two other places to U.S.)

Grand Prize of Lucerne

1. Mexico		
2. Mexico		
3. Switzerland		
4. U.S.	Col. Wing	on Democrat

(Two other places to U.S.)

In winning the individual Championship in Prize of Nations, Captain Russell made two clear rounds. Colonel E. F. Thomson, Cavalry, Team Captain, reports that he feels that Lucerne was a good test of his horses and that they are ready for London, where again the stiffest competitors will be the teams from Mexico, with France, Italy and England very close. He further reports the team owes its success at Lucerne to the support given it by the European Command in allowing it to come to Germany last fall and complete its final training and utilize the excellent facilities available at Munich.

Between this issue of the Journal and our September-October issue, the United States Army Equestrian Team will be in action in the 1948 Olympics in England. We shall carry the complete report of the Team activities as they represent our country in this outstanding sport for perhaps the last time. We shall also cover the results of several important shows following close upon the heels of the Olympic competition, in which the Equestrian Team also will take part.

The Reserve Officer And His Unit Schools

by Colonel Henry C. Newton

SEVERAL articles and letters in recent issues of the the Service journals indicate a genuine and most sincere effort on the part of both the assigned instructors and commanding officers of Reserve Units to develop a healthy training program for the Reserve officer either assigned to a unit or interested in furthering his military education. The following remarks are addressed primarily to those officers responsible for Unit Schools to aid them in the solution of their School problems.

The problems facing the Reserve officer today are many and complex; however, the specific problem of "what-to-do-with-an-evening's training" is one which can be solved regardless of "training obstacles both human and physical."

There are certain basic requirements for an evening's school. The program must satisfy three fundamental conditions:

A. The subject must be interesting.

B. The content must have real training value.

C. The subject must be well presented.

Faced with the problem of obtaining a maximum of participation, the question of interest is paramount. With the constant demands for our Reserve officers' evening hours—the factor of interest assumes monumental proportions. The subjects announced in the monthly bulletins or whatever means of notification is available, must have real "pulling power." Study the wording of the title—it must always be remembered that a School program is that of selling National Insurance. Perhaps among the officers of the unit there will be found an able and trained advertising expert—he should be consulted.

The officer giving his evening to his Unit School must be given in return the opportunity to take something away. Every minute must be crowded with real training value at a level which he will readily recognize as possessing immediate or potential value. This problem is in itself most difficult since there are officers of all grades and varied experiences—from the young Second Lieutenant who just received his Reserve commission to the Colonel who as a Major of Infantry commanded a front-line battalion during the Bulge. To find training value in a subject to satisfy these two extremes would tax the brain power of a Houdini. Regardless of an officer's experience or lack of experience, any well selected subject will contain substance of value—to the neophyte, news—to an experienced officer, a refresher.

The question of presentation is equality important—the interest-raising value of an announcement complete with a well selected subject will be lost if the subject is not well presented; not only will the subject fail to go over, but a sharp drop in attendance at the next evening school will be the net result.

The assigned instructor or officer selected to present the subject must be able to speak on his feet and handle the presentation in a convincing manner—he should be a master of his subject. If the assigned instructors are not good speakers, the officers of the unit who are must be sought. The services of an instructor trained in the art of public speaking should be obtained for those who are not! There are sufficient experienced officers in any large area to handle a wide variety of subjects—fit the subject to the Unit School and the officer to the subject.

An officer who understands the technique of subject presentation can make the most dry subject interesting. A combination of facts, humor, illustrative examples, and enthusiasm can make fifty minutes on the Articles of War sound like a Jack Benny program!

Fundamentally, all officers, either active or inactive, need further instruction in the Technique of Training, or as generally referred to, Training Management. A class was recently held at The Constabulary School on the subject of The Estimate of the Training Situation—this was but one subject in a series of forty-two hours in Training Management. The class consisted of both Regular and Reserve officers from Second Lieutenants to Lieutenant Colonels—yet out of a total of 106 officers only two had ever prepared an Estimate of the Training Situation—those two "estimates" were prepared as solutions to a problem given at one of our major Service schools. This class represented a broad cross section of the officer personnel now on active duty. It is, therefore, self-evident that Training Management can well be a subject lending itself to the Unit School.

Insofar as the organization of the school itself is concerned, it is wise to present two subjects somewhat different in nature during one evening session. Every officer should be familiar with the organization and tactics of the newly organized Infantry, Armored, and Airborne Divisions; as well as the present organization of the Department of the Army and Army Field Forces (formerly Army Ground Forces). Combined with Training Management, one can easily suggest the subjects for a training program for a series of twenty evening Unit School sessions—each session consisting of two 50-minute periods with a proper break.

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*Colonel Henry C. Newton was commissioned in 1918 upon graduation from The Field Artillery Central Officers Training School. Between the wars he was active in the National Guard. In 1941 he was assigned to the Armored Force, and served as G-3 and Assistant Center Commander. He next commanded the Armored Force Officers School at Knox, leaving in 1943 for overseas command of CCB, 12th Armored Division. He is now **Assistant** Commandant and Director of Training of The Constabulary School.*

Such a program should consist of the following:

SCHOOL SESSION *SUBJECT*

1st The Department of the Army
The Background of Training
2nd The Army Field Forces
The Estimate of the Training Situation
3rd The Infantry Division—Organization
The Estimate of the Training Situation
4th The Infantry Division—Tactical Use
The Estimate of the Training Situation (Problems)
5th The Infantry Division—Tactical Use
War Department Training Publications, Scope and Use
6th The Armored Division—Organization
Fundamentals of Military Instruction
7th The Estimate of the Training Situation (Solution and Discussion)
8th The Armored Division—Combat Commands
Directives—Program and Schedules
9th The Armored Division—Tactical Use
Preparation for Training
10th The Armored Division—Task Forces
Preparation for Training (cont'd)
11th The Airborne Division—Organization
Presentation of Subject Matter
12th The Airborne Division—Tactical Use
Training Aids, Their Design and Use
13th The Airborne Division—Tactical Use
Projected Aids, Scope and Use
14th The Airborne Division—Tactical Use
Supervision of Training
15th Organization & Function of Supporting Troops
Practice Teaching, Platform Technique
16th Organization & Function of Supporting Troops
Practice Teaching, Platform Technique
17th Organization & Function of the Services
Practice Teaching, Platform Technique
18th Practice Teaching, Platform Technique
19th and 20th same as 18th

An analysis of the above program will indicate a reasonably complete course in Training Management as well as complete coverage of the combat divisions of various types and their supporting troops. This program will give an excellent background and sound foundation for the more detailed development of tactics of small units and staff operations.

The course in Training Management is largely contained in FM 21-5 Military Training, and TM 21-250 Army Instruction—these manuals should be in the hands of every officer of the Army regardless of his component or present duty status. They are sound in their doctrine, clear and concise in their presentation, and invaluable as a guide to the planning and presentation of training. They contain sufficient information to prepare any of the subjects listed above in the field of Training Management. The Instructor Training Division of The Armored School, Fort Knox, Kentucky, has prepared an excellent work titled "Army Instructional Methods" which can be obtained from the Book Shop of The Armored School. This document is an excellent supplement to the manuals referred to above.

The necessary background for the other subjects listed can be obtained from current directives of Army Field Forces; The Infantry School at Fort Benning, Georgia; or The Armored School at Fort Knox, Kentucky.

Training aids in the form of charts should, if possible, be made available for each conference. CHARTS STIMULATE THINKING. If not available, they can be prepared by the neighborhood sign writer at very little cost. It is also desirable that mimeographed outlines of the various lectures be prepared. These outlines should be rather complete in form and reproduced, if possible, with the facing page blank so as to permit the officer to take notes during the conference. Diagrammatic outlines are highly desirable to cover the organization of the various type divisions as well as the supporting troops—KEEP THE MIMEOGRAPH MACHINES ROLLING.

Sessions 15 to 20 inclusive include practical work in the form of practice teaching. With the foundation laid in the previous sessions it is suggested that key officers be selected for a 25-minute presentation on further development of the tactical use of the various Combat Teams and Task Forces of the Infantry, Armored and Airborne Divisions. Not only will this give the officers practical experience in subject presentation, but will prove a stimulant to the school as a whole. This procedure has been in vogue at the Constabulary School for the past year and has produced splendid results.

If properly presented, the program authorized above will contain sufficient interest and information of real training value to maintain a satisfactory Unit School for a considerable period of time.

HINTS FOR UNIT SCHOOLS

1. Send out notices in ample time indicating schedule and subjects.
2. Present related subjects—each subject should follow the previous subject in logical sequence and be thoroughly "tied in."
3. Consult your staff and those officers especially interested in the over-all problem of training.
4. Do not permit any one officer or group of officers to hog the session.
5. Do not schedule a Unit School in a high-priced restaurant—with a cocktail bar adjoining.
6. Do not permit a Unit School to drift into a prolonged bull session.

TANK COMMANDER: KNOW YOUR RADIO!

by Captain W. E. Felty[*]

IT was well established during the recent war that a functioning radio in a tank is, in many cases, the only difference between defeat or death on the one hand and success and victory on the other. Therefore, as tank commanders, we should know that item of difference—not only to save our own skins but also to save the lives of those under our command.

It is useless for a tank unit commander to try to command his unit from a tank in which the radio is out of order. And it is downright dangerous when a commander who *does not know his radio* tries to command a tank and his unit. It is dangerous to himself, his crew, and the other members of his unit. In fact, it is a much better and far less dangerous situation when the tank commander fails to answer or make a call because of a radio failure than when he so fails because of his lack of knowledge of the capabilities of his radio set. When he knows his radio, he can diagnose the trouble and quickly get it back into operation. But if he doesn't know his radio, he frantically and immediately blames everything and everybody for the no-good and undependable radio in his tank—and fails to realize the cold fact that he is to blame. The tank commander is the crew member who transmits over the radio. The responsibility for its proper operation rests squarely upon his shoulders.

Who are tank commanders? Why, those for whom tanks are furnished—those individuals who command a tank and those who command a unit while mounted in a tank. The division commander, combat command commanders, tank battalion commanders, tank company commanders, tank platoon leaders, and individual tank commanders—all are tank commanders, and each is responsible for the operation of—and actually operates—the radio set in his tank.

There are three phases to the instruction you should receive in learning to know your tank radio. First, there is the classroom type of instruction where you learn the detailed operation of the radio, including the manipulation and adjustment of the various controls. The second phase includes actual operation of the radio; it is usually carried on concurrently with other field instruction, such as tank driving and road marches. The third phase is somewhat different. It must come after you have had some practice in the operation of the tank radio set. It might be called the general review in preparation for the master's degree. It includes the final tips necessary to give you a complete knowledge and understanding of the peculiar capabilities and military characteristics of your tank radio. When you put to practice this information, you are truly a master—you need have no fear of endangering any lives because of your lack of knowledge of your radio. You will then know your radio, and it will surely work for you. Essentially, here are the important points for the third phase:

General Knowledge

The tank commander's radio is the SCR-508 (or SCR-528, having only one receiver). The 508 is neither a delicate instrument to be handled with kid gloves nor one which is to be understood and operated only by specialists. It is your radio, designed and built to be operated by the tank commander. Actually, the 508 is a tough, reliable, efficient, and compact communications unit, designed and built to take about anything any radio set will. It has undergone precise and exacting tests at the development laboratories to make it perform equally well under tropical sun and in the arctic. During World War II, it served tank commanders under every conceivable condition—and it came out with flying colors.

The 508 was designed to meet specific military characteristics called for by the Armored Force—the three most notable of which were that it would have ten instantly available channels with push-button selection, have a range of ten miles under normal conditions, and use the principle of frequency modulation (usually called FM).

The term, FM, should cause no concern. Everybody, during the past four or five years, has heard about FM. Our commercial broadcasting stations are using it today. The fact is, however, that before we had this new FM, no layman ever spoke of AM (amplitude modulation), which we used for years and years. Actually, insofar as the tank commander is concerned, it matter little whether his radio is AM, FM, or PFM. But, since the very term *FM* implies some secret knowledge required in order to understand the 508, let us explain it here and now—AND THEN FORGET ABOUT IT.

FM and What It Does For You

FM isn't hard to understand. If your radio is frequency modulated, your voice makes small but extremely fast changes in the operating frequency of the set. If, on the other hand, your radio is amplitude modulated, your voice makes fast changes in the set's amplitude, or output power. In other words, in FM your voice wiggles the frequency, while in AM it wiggles the power output.

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[*] Communications Department, The Armored School, Fort Knox, Kentucky.

Here is what FM does for you in your 508: It boosts your useful coverage 30%, and it resists noise interference—a tough problem in armored communication. But good as it is, FM isn't a cure-all. It is the best thing for tank work, but it still has limitations as have all radio communication devices. When you know the limitations of FM and how to spot and lick these limitations in your 508, then you know precisely how to make the 508 go to work for you. That is exactly what the tank commander must know about his radio—how to detect the limitations and know what to do about them. Then he knows his radio. And when he knows his radio, he can put it to work.

The 508 Doesn't Sound Big

After listening to a 510 and a 508 side-by-side and on the same channel, you may feel like saying, "What's the 508 got that the 510 hasn't? The calls sound louder on the 510!" Sure, you're right. At about one or two miles the 510 will sound louder. That is still no indication that it will transmit farther.

The 508 is a tank set, built to be used near lots of noise. It won't SOUND big, but it SENDS big. In fact, it puts out about 30 watts compared to the 510's two. As a test, place a 508 and a 510 out about three miles and at the same point. When they are ready for operation arrange for the 510 to start transmitting (with the 508 silent). Then, while the 510 is still transmitting, have the 508 take the air on the same channel. See which one gets the message through.

How to Side-step Pitfalls

When it becomes necessary to conceal your tank, it is much better (for your radio) to sit in a clump of bushes, in a thicket, in a woods, or just off the crest of a hill, as you normally would in a firing position, instead of at the bottom of a gulley, valley, or depression. Working your 508 close to trees or shrubbery doesn't affect its operation much unless your antenna is actually scraping or touching branches while you are transmitting. This can easily be avoided by a little maneuvering and by getting the tank edged up on a rise, fully protected by trees and bushes, yet with the radio getting out well. Don't worry too much about trees, but don't let the antenna rest against them while you are transmitting. This is a trick of the trade, and you will soon observe it without second thought.

Do not pull down your antenna with a rope or wire. Your antenna is short enough to pass safely under low trees and through underbrush without breakage. Besides, there is a big point in having your antenna vertical. If it's not vertical, it shoots your signals off at an angle. Keep your antenna upright when sending or receiving.

How to Get Your Transmission Across

The announcer in a soundproof studio of a big broadcasting station usually speaks in a low voice. So does a speaker over a local telephone line. Your tank radio, however, operates most of the time under entirely different conditions. Many contacts have failed while the tank is in motion because the commander made the mistake of talking in a low, quiet voice. If you want attention on the air, especially when working any distance, don't mumble quietly into the microphone. Talk up. Speak directly into the microphone, close to it. Avoid talking sidewise or "across" it.

Another reason why many calls have gone unanswered is inattention. Thoroughly memorize the call signs assigned you. Keep an ear out for them. Don't miss the important call. And be sure, too, that you have listened in on the channel for a few seconds before you go on the air. Don't break in on someone—give him a chance.

Did you ever listen to a commercial airline radio net? Not one unnecessary transmission, but every time a call is made—bing—the answer comes right back on first bounce. The moral of this is that you should chew the fat at the table, not at the microphone.

Range and How to Get It

The range of any radio set is like an elastic band. That is, the range may be stretched to twice its length or squeezed to a quarter of its length. Whether the operational range of a radio is stretched or squeezed, and just how much, depends mainly on four things: terrain, frequency, power, and interference.

This goes for the 508. The frequency band on which it operates is from 20 to 27.9 megacycles. Tactically, this is not a long-range band. Nor is it limited to anything like line of sight; but it won't reach out so far that it interferes with distant nets operating on the same radio channel. Instead, the 508 delivers a solid signal in its tactical range, then drops off fast. This hands you three big advantages—it gives you communication where you need it most, it reduces interference with friendly adjacent communication, and it makes a long-range enemy interception much more difficult.

When a commercial radio broadcasting station is put up, days, weeks, and sometimes months are spent in studying and seeking the exact spot for the location of the transmitter. The reason for this is that a few yards one way or the other may add or lose a few thousand listeners. The location of your 508 must be selected with the same kind of careful consideration.

When an important message is to be transmitted to a distant station, you won't have all the time you would like in order to pick the ideal spot; but when you get onto the tricks of good operation, you won't need it. Instead, you will soon be able to tell from a quick glance at the terrain just how your radio is likely to perform. If the range to be covered is two, four, or six miles, most any average terrain will do. But for a 10-mile or 12-mile shot, you must keep your eye peeled for the good spots.

Good spots are slight rises in the ground. (Dips, gulleys, and underpasses are poor locations.) The bigger the rise, the better your 508 will perform.

Some tank commanders, after experience with the 508, discover that by some clever spot-picking they can set up a long-distance record of, say, 20, 30, or 40 miles, which defies any and all competition. Word of this gets around in a hurry, and other tank commanders, less adept at spot-picking, take their sets into the field, only to have them fall down at 10 or 15 miles. There's an immediate reaction. The 10-mile radio set is suspected of the worst and promptly sent back to radio repair for an injection of something or other. Ever-obliging radio repair then goes to work, only to discover the 10-mile set is perfect and tuned to the hilt. Don't let the rumor that "so-and-so's set will do a regular 30 miles" fool you. It's done with mirrors in the form of hills.

All 508 radio sets, when in working condition and properly tuned, are hopped-up to their limit and put out the same amount of power. When you are in combat, this long-distance contest is something to be forgotten in a hurry. Stick within 10 miles of your contacts. Keep a couple of aces up your sleeve, or in your palm, if necessary. Play close to the vest on this range business.

THE END OF THE RANGE AND THE DANGER SIGNAL

With some radios of the long-range, low-frequency variety (for instance the 506), as the distance between stations increases, the reception will be good, then possibly bad, indifferent, then maybe good again, eventually dropping to nothing. But this extended and spotty range isn't the way your 508 works. As you approach the end of the range of your 508, you will get a danger signal; reception will become indistinct and noisy. That is your warning not to proceed much farther away from your contacts. You will soon be entirely out of range. What do you do? Stop, look, and listen! *Stop* the tank (if conditions permit), cutting noise interference 50%. *Look* for a rise or hill, which will help another 50%, and *listen* to see if reception isn't much better.

Here is a point to remember: The solid operating range of your 508 stays the same whether it's day or night. The range of some sets occasionally goes haywire between sunrise and sunset, but not your 508. A station which you can contact at noon can be worked equally well at midnight. The 508 is a round-the-clock set.

Incidentally, there is another important point on this range business. As a matter of fact, here is a short lesson in when to play one of those aces that you have up your sleeve. The ace, in this case, is in the form of a simple gadget called the "squelch." It's extremely important that you know the purpose of the squelch and how to adjust it.

THE SQUELCH CONTROL AND HOW TO USE IT

The receiver of your 508 set is very sensitive and, ordinarily, if no signal or call were being received, it would pick up every random noise on the air and amplify it into a loud roar. Consequently, on long periods of stand-by when you would be listening or waiting for orders and instructions, this roar would be a terrific strain upon your nerves. For this reason, your 508 rereceiver has a squelch circuit built into it. This knocks out or squelches this continuous noise. Then when the signal comes on, this circuit trips and lets the signal come through—free from noise and static. Essentially, it's a robot telephone operator which rings you when no one is calling. But this squelch is something which must be adjusted with care and watched with an eagle eye, for carelessly and improperly adjusted it will reduce the sensitivity of your receiver and harmfully decrease its range.

The squelch circuit is operated and adjusted by two controls. One control, the SQUELCH-ON/OFF switch, is located in the lower right corner below the receiver push buttons. The second control is the SENSITIVITY control, located in the lower left corner of the receiver panel. The way to adjust this squelch is first to turn the ON/OFF switch to the ON position, then rotate the SENSITIVITY control fully to the right. There will (should) be a roar or noise in the loudspeaker when there is no signal on the air. Then, turn the SENSITIVITY control to the left until this noise *just* disappears—NOT A HAIR MORE. Turn it farther than that and you will clip the range of your receiver. Remember, you won't actually notice that your range has been clipped when working with a near-by set, but farther away it will make a whale of a difference and cause you to miss important calls. Therefore, any time you make a call and hear no answer, try again (here is the lesson on when to play that ace—remember it), and this time be sure that the squelch is turned OFF. And if you hear the weak station, leave the squelch OFF until you are closer to the station. So remember: Any time a station in your net is coming in with a weak signal, turn the squelch OFF and leave it OFF. Don't trump your own ace.

INTERFERENCE AND WHAT TO DO ABOUT IT

When someone builds the perfect radio set, there will be no such thing as interference. But until he does, all that we can do in the meantime is to work toward it with the means available. FM is a long step in the right direction, but it's not perfect. The 508 fills a gap, but it has limitations which still leave much to be desired.

In general, any noise which interferes with what you are trying to hear on a radio is chalked up as interference. Strictly speaking, that is correct. But actually, there are a number of types of interference which you may encounter. If you can identify them, that's 85% of the cure. Each has a sound all its own, which you will soon be able to recognize. Here they are:

a. *Direct Interference.*

There is probably nothing more irritating to the tank commander than when someone breaks in on an important message which he is trying to receive over his radio.

This is direct interference, and if it is not carefully avoided, it may easily disrupt the entire operation and effectiveness of a radio net.

This may take one of two forms on your 508. First, a loud and unwanted voice may break in on your channel, completely knocking out the transmission of the man you want to hear. Or, secondly, a warble or wobbling whistle (sort of a "shushing" noise) may come on, disturbing your reception. If the interfering voice is loud and clear and swamps your contact, then the interfering station is much closer to you than is your desired contact, and nothing can be done about it. If the interference takes the form of a warbling whistle, the offending station is farther away than your desired contact. Work the station, if you can. If not, wait. In either case, the trouble is usually due to poor net procedure —someone is sending out of turn. To remedy it, try to identify the offending station; then call him and advise him of the situation.

b. *Sideswiping.*

Sometimes another man's transmitter can interfere with your reception when it's operating on an adjacent channel, especially when the vehicles are close together. For example, a 508 in a tank near by may be sending on channel 41 while you are receiving on channel 42, and breaking up your reception by coming in on your channel—not clearly, yet enough to disrupt your reception. This is called sideswiping. The remedy is to separate the tanks. Usually, 200 yards will do the trick.

c. *Ignition Interference.*

The greatest handicap which any radio that is carried and operated in a vehicle ever meets is the fact that it has to be near spark plugs, their associated wires, and the high voltages necessary to produce a hot, fat spark. Each one of these sparks is a wicked discharge which, if given half a chance, produces a first-class radio signal quite capable of being transmitted miles on its own if it were hooked to an antenna. Therefore, every vehicle must have a thorough going-over before a radio is installed in it, and its spark plug and ignition system must be carefully worked on. This process is called "suppression." Most vehicles have received ignition suppression treatment before leaving the factory. But breakage is always possible in the field.

If your radio is unusually noisy, it may not be your radio's fault. Ignition noise from spark plugs has a unique sound. When the engine is idling, sharp staccato cracks sounding like miniature machine-gun fire will come from the speaker and headphones. The faster the engine is run, the faster the sharp reports will occur. Finally, when the engine is gunned to its limit, the crackings will occur so rapidly that they sound like one loud continuous roar. If this type of noise occurs, check the suppression system—something is loose, broken, or disconnected.

Spark plug and ignition interference is something over which your 508 holds a big club. It will do little or no receiving of ignition noise, provided you are listening to strong incoming transmissions. BUT HERE IS WHERE THE DANGER LIES. At the end of your range, say 10 miles out, your receiver will be scraping the ceiling for a signal. If your spark plugs are noisy, they will smack your receiver hard, and the result will be nothing but noise. (WATCH THAT SQUELCH!) So check your suppression system. Watch it closely.

FINAL TIPS

As final tips, here are some things to remember; and if you put them into practice, your 508 will surely go to work for you.

(1) If you want more range, head for a good location. But don't expect too much range. Keep an ace up your sleeve. Play close to the vest with your range.

(2) When signals start getting noisy, you may be running out of range. CHECK THAT SQUELCH.

(3) Keep your antenna vertical. If you don't, it will put a curve on the ball. Pitch 'em straight.

(4) To win contacts and influence your listeners —SOUND OFF!

(5) Keep an ear out for weak calls—they may be for you, and they may mean business.

(6) Trees won't bother your transmitting. Use them for concealment if you can, but when you transmit, don't let the antenna touch the branches.

(7) If you are receiving a lot of cracking noises, check the suppression system—it may be leaking.

(8) Poor reception or transmission MIGHT occur as a result of combined reflections from near-by trees or hills. MOVE 50 feet or so (AND YOU MAY GET THE SUN OUT OF YOUR EYES).

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The Armored Cavalry Journal

Make Use Of The Service We Provide For You

Communications At The Armored School

A MODEL BATTERY ROOM

by Captain Kenneth L. Thompson*

A VISITOR in the Communication Department, The Armored School, Fort Knox, Kentucky, would eventually find himself in one of two laboratories of the Radio Repair and Maintenance Division. This division consists of technically qualified officer, enlisted and civilian instructors who teach second echelon radio maintenance and repair to Armored Communication Officers (MOS 0200), Armored Communication Chiefs (MOS 542), and Armored Radio Repairmen (MOS 648). The courses employ similar equipment. This article will, however, discuss the instruction and power requirements of the Armored Radio Repairmen.

The program of instruction extends over a period of 18½ weeks. Instruction falls in two types: the classroom conference and the laboratory exercises. The laboratory consists of two benches each identical in size and shape, with combined facilities capable of handling a student load of fifty. Each position has an A-C, 110-volt power outlet, 6.3 volts A-C connectors, 0-300 volts D-C connectors and 12-volt D-C, high amperage studs. This laboratory is used by the student for the purpose of applying the technical theory studied during conference periods to actual radio training aids, radio receivers, and radio transmitters. During the instruction of electrical and radio fundamentals, the students use breadboards, which consist of actual radio parts and schematic diagrams mounted on small plywood panels. The instructions for wiring these breadboards are issued to the students in the form of work sheets. Since these breadboards, when properly connected, will actually operate, it is necessary that they be furnished electrical power. Such power is obtained by using a conventional full wave rectifier power supply incorporating a "brute force" filter system, which supplies the voltage necessary for the operation of the circuit elements.

The instruction in fundamentals is followed by practical work with radio equipment which is common to armored units. Circuit analysis, testing, alignment, and servicing of these radio sets are the main subjects covered. These radios normally require a 12- or 24-volt, D-C power source which is furnished by the vehicular battery. In the laboratory, however, the task of moving heavy storage batteries from the charging room to each student position presented a definite problem; therefore, some other system of power distribution was necessary.

The development of a central battery room, capable of supplying each position of the laboratory benches with adequate voltage and amperage, was the desired solution.

The establishment of a central battery source was accomplished by using a separate room adjacent to the laboratory which houses the batteries, chargers, and the necessary maintenance equipment, and includes a forced draft ventilation system. The battery system itself includes four banks of 12-volt batteries, with provision for connecting each bank to a separate tungar charger by a series-parallel bus bar device, provision for connecting each bank to a distribution and monitoring panel by a parallel bus bar device, and a "jumper" method of connecting any two banks to the laboratory positions. The distribution and monitoring panel includes an electronic metering device which indicates the closed circuit voltage of each bank. Panel lamps are used to indicate proper connection from the banks to the laboratory positions. Each bank is capable of furnishing a normal drain under maximum load of 1200 amperes current. If more current is necessary because of an increase in the number of radio sets being used, two or more banks may be connected in parallel. However, the maximum student load of 50 men all operating sets would not exceed the permissible current drain from two banks in parallel.

One man is required to maintain this system. His duties include care and cleaning of each battery, testing specific gravity of each cell and maintaining continuous records of the condition of each cell. He also must arrange the bus bar connections for either charging or discharging (loading) each bank.

This method of supplying D-C power to the laboratories has saved a great deal of manhandling and a tremendous amount of time and has eliminated danger to personnel from acid burns or shock. Its existence is a necessity, and it has paid off in all respects.

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*The Armored School, Fort Knox.

Armored Division Associations

1st Armored Division

As we go to press the Old Ironsides Division is holding its first annual reunion at Louisville, Kentucky for the three-day period 15, 16, 17 July. Headquarters were announced for the Brown Hotel, and the convention committee under Colonel L. V. Hightower had arranged a program of interest to all former members of a grand combat division.

One of the high points of business discussion as the association met undoubtedly was the completion and publication of the history. In the next issue of the Journal we shall carry the story of the convention.

4th Armored Division

The 4th Armored Division Association has had an active period recently. On 15 June, at Watertown, New York, a Tank Memorial was dedicated to this famous division. The dedicatory address was made by General Jacob L. Devers. Other guests include General Clarke, former CG and present President of the Association, and Colonel England, CO at Pine Camp. Hosts for the occasion were Mayor Henry A. Hudson of Watertown and Commander Robert L. Watts of American Legion Post 61.

The Association held its second annual reunion at Boston on the first three days of July. Principal speaker at the final banquet was the Honorable Henry Cabot Lodge, Jr., Senator from Massachusetts. Lieutenant Colonel Graham Kirkpatrick was toastmaster.

6th Armored Division

Louisville, Kentucky is in for it again as the 6th Armored Division Association descends on the city for a three-day convention to center around the Seelbach Hotel and to cover the dates 30 July through 1 August. If you want to make last minute arrangements, the person to contact is Lieutenant H. C. Smith at AFF Board Number 2 at Fort Knox, Kentucky.

The convention will include unit get-togethers, a business meeting, a ladies' luncheon and a banquet and ball with floor show.

7th Armored Division

Former members of the 7th, and in particular of Combat Command B, will be pleased to know that in late June the Department of the Army approved the recommendation for a Distinguished Unit Citation for CCB for combat action from 17 to 23 December 1944, inclusive, at St. Vith, Belgium. The units within the citation include Headquarters and Headquarters Company; the 17th and 31st Tank Battalions; the 23rd and 38th Armored Infantry Battalions; the 87th Cavalry Reconnaissance Squadron (M) (less Troop D); the 275th and 434th Armored FA Battalions; the 965th FA Battalion; the 168th Engineer Combat Battalion; the 3rd Platoon of Company F, 423rd Infantry Regiment; Company B, 33rd Armored Engineer Battalion, and Company A, 814th TD Battalion (SP).

The Armored Cavalry Journal congratulates CCB of the 7th Armored Division.

11th Armored Division

Most members of the 11th will have received their Newsletter, announcing the second annual convention which will be held in New York City on August 12th, 13th and 14th. Headquarters will be the Commodore Hotel. Business will include the election of officers, selection of next year's convention site, and discussion on the erection of a school at Bastogne. There will be a full program of entertainment for the ladies and events will click off regularly up to the big Dinner-Dance on the 14th.

Thunderbolt: The History of the 11th Armored Division, is in everyone's hands. For those who have not ordered a copy we suggest that you do so at once. Your prompt payment will bring you a fine book about a fine division: in addition, it will assist in making possible the presentation of a free copy of the history to the next of kin of your comrades who fell in action.

For convention information write to George D. Halprin, The Pen-Rite Corporation, 744 East 138th Street, New York 54, N. Y. For histories and dues write the association at 1719 K Street, N. W., Washington 6, D. C.

1st Cavalry Division

The First Cavalry Division Association is in a favorable position in the fact that the division is still in active service. This allows continuing support to the activities. When the First holds its convention at El Paso, Texas, on November 8, 9 and 10, the division will provide combat veterans still serving with it with the opportunity to attend the convention on a leave basis. A survey is in progress at the division's occupation station in Japan to find out the number of men eligible to join the party on the journey to the "doings" down in Texas.

The Armored Cavalry Journal carries as much information about the various division associations as it receives. If you feel there is more attention given to one than another it is the result of the organization, enthusiasm and publicity available from some sources and not forthcoming from others. We would like to carry general information on all associations in Armored Cavalry, including Armored Divisions, Cavalry Regiments and the separate units. Let us hear from you!

The Armored Cavalry Journal
BOOK SECTION

THE GATHERING STORM. By Winston Churchill. 784 Pages. Houghton Mifflin. $6.00.

A review by

WILLIAM GARDNER BELL

From the World's Senior Statesman comes the first installment of the history for which we have been waiting. Perhaps you sampled this work in *Life's* 50,000 word teaser, or via the more substantial 93,000 words dished up by *The New York Times*. Or perhaps you dislike samplings and preferred to wait for the release in late June by Churchill's publishers of the complete, nearly quarter-million word text.

The Gathering Storm is the first of five (possibly six) volumes in a work titled "The Second World War." Mr. Churchill states in his preface that he regards these volumes as the continuation of the story of the First World War covered in his previous books, *The World Crisis*, *The Eastern Front*, and *The Aftermath*. The whole is designed to "cover an account of another Thirty Years' War."

This first volume is broken down into two books respectively labelled "From War to War" and "The Twilight War." With appendices it runs over 780 pages. Truly a monumental thing.

The Moral of the Work is typically Churchillian;

In War: Resolution
In Defeat: Defiance
In Victory: Magnanimity
In Peace: Good Will

The stated Theme of the Volume is an indictment in which we all must share:

> "How the English-speaking peoples through their unwisdom, carelessness, and good nature allowed the wicked to rearm."

The Gathering Storm is potent history by a master historian who lived within and assisted in the making of the history of which he writes—a connection resulting in the amazing situation whereby the historian writes about himself—the statesman—with a fundamental detachment that leads to such assessments as the one associated to the cancellation of a pending first-meeting of Churchill with Hitler in 1932; a meeting posed through the cultivating liaison of "Putzi" Hanfstaengl, and one which apparently chilled and fell through because of certain of Churchill's remarks to the emissary concerning Hitler's attitude toward the Jews. "Thus," says Churchill, "Hitler lost his only chance of meeting me." With this statement, Churchill the historian places in their proper relation the two men Churchill and Hitler.

This is history doubly strong by virtue of its recent transpiration, and by the firsthand familiarity of the reader to its development. Book One within the volume covers the between-the-wars period, 1919 to 1939. From a springboard chapter based on the Follies of the Victors, at Versailles, Churchill proceeds through the high decade of peace to 1931; the remaining part of the volume, Book Two, is the step-by-step retrogression in the march to a new war; a description of the actions of the aggressors, balanced against the apathy and negation of the appeasers. The title of this latter Book is selected from a Chamberlain source; an effective coinage, and one for which Churchill gives his colleague full credit.

Book Two is much the easier reading. It covers the darkening period within the dates 3 September 1939 through 10 May 1940, within which came the fall of Poland, the evolution of the submarine warfare, a series of important naval engagements, and the unfortunate ventures in Norway. This Book and the volume climax with the elevation of Mr. Churchill to the Prime Ministership, bringing to the statesman "a profound sense of relief." The position brought with it "the authority to give directions over the whole scene." As Mr. Churchill sums it up: "I felt as if I were walking with Destiny, and that all my past life had been but a preparation for this hour and for this trial."

The Gathering Storm is bristling with excerpts from Churchill's speeches, letters and writings, items which serve as a documentation of his statesmanship and of his consistent and unerring calling of the turn. He is unsparing of self-criticism, quick to assume a full measure of responsibility, and most kind with his opponents, most of whom fare badly enough in the documentation and in the light of events, despite his benevolence. Churchill on Chamberlain may well go far to redeeming the latter in the eyes of many who adopted casual, hasty judgments without a full knowledge of background. Therein lies much of the value of history.

The political side of the story is interesting. How obvious it is that the party in power is not always right, nor the people who placed it there! How plain it is that politics and politicking can be most harmful! Real injury can materialize through the wishful thinking of the people.

A comparison of the situation then and the situation now cannot be denied. With a little juggling both sets of events could march in the same parade. Britain's relation then to the Channel, Central Europe, the stage of technology and the state of world politics has a definite affinity to America's relation to the Atlantic, Eurasia, the stage of technology, and the state of world politics today. We might secure to ourselves many benefits through a certain ability to call the play. Certainly the United Nations is undergoing some buffetings similar to those that battered the League.

To what extent are we riding a merry-go-round? Some inevitabilities poke through. Churchill states the caution

WELLES AND EDEN

THE PALESTINE PROBLEM

What is the Palestine issue? What is its background? What have the Powers done about it, confronted with the problem of that sad and holy land?

These questions form the primary substance of "We Need Not Fail" in which Sumner Welles examines the age-old bases of the conflict which is now so concerning the world and in which he asks that the Powers make a decision worthy of their greatness and of the world's hopes.

And because so many of these hopes are centered on the United Nations, Mr. Welles makes inquiry into the weaknesses of this organization. And because so many see in this organization the culmination of their hopes, he points out a path which he feels would make nations more truly united and justify these hopes.

WE NEED NOT FAIL

By SUMNER WELLES

Former Ambassador to Cuba and Assistant and Under Secretary of State. $2.50

THE RIGHT HONOURABLE
ANTHONY EDEN

Freedom and Order

Selected Speeches 1939-1946

After Munich and the resignation of Anthony Eden, Winston Churchill said of this young man, "There seemed one strong young figure standing up against long, dismal, drawling tides of drift and surrender, of wrong measurements and feeble impulses . . . He seemed to me at this moment to embody the life-hope of the British nation."

The Rt. Hon. Anthony Eden began his political career following World War I and since that time his public utterances have reached wide audiences through press and radio. Now selected and arranged for publication, they constitute a permanent record of far-reaching diplomatic events observed, analyzed, and influenced by Britain's Foreign Secretary.

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early in Book Two: "The advantage which a Government bound by no law or treaty has over countries which derive their war impulse only after the criminal has struck, and have to plan accordingly, cannot be measured. It is enormous." He was speaking of Hitler's Germany! His qualification. . . . "On the other hand, unless the victory of the aggressors is absolute and final, there may be some day a reckoning." That reckoning came. We were in on it.

Volume Two in the Churchill work is now in final proof. Titled *Their Finest Hour* it will be published around the end of the year. Volume Three is under the Churchill pen and nearing completion. The five volumes are scheduled for publication at approximately eight-month intervals. We may look forward with high anticipation to the succeeding volumes in which will be introduced our part of the scheme of history. Through Winston Churchill's work we are sitting in on history's verdict.

✓ ✓ ✓

WE NEED NOT FAIL. By Sumner Welles. 142 Pages. Houghton Mifflin. $2.50.

Sumner Wells and Houghton Mifflin have achieved almost a newspaper quality in the release of this mighty little book on the warmest of the hot war areas in this troubled universe. Although it is primarily a book about Palestine, it is also a book about the United Nations and American Policy.

Looking first at the historical picture, Mr. Welles has opened the book with a Chronological Table, embracing events as they affect the Holy Land and its peoples from the year 135 AD through May 14 of this year, the date of proclamation of the new Jewish State of Israel and of our *de facto* recognition.

With the table as an opener, it takes Mr. Welles only two pages to set forward the record. He offers a factual background to show that "of the three thousand years that have passed since the Israelites first entered the Holy Land, the Jews have been a dominant force in that region for some twelve hundred and the Arabs but some four hundred years."

As well as being a strong case in favor of Zionism and partition, this is a critique on the United Nations and a criticism of American policy on the Palestine issue. The author suggests that the Palestine situation contains all of the ingredients for being to the UN what Manchuria, the Rhineland, Ethiopia and Munich were to the League of Nations, and therefore to the world. Two points are employed by our former Under Secretary of State. He supports fully the validity of the Balfour Declaration as a lawful action by a nation acting on the authority of the appointing body, the League, in the mandate capacity. He stresses the substantial contribution of the Jews to the betterment of the disputed land.

Criticism of our policy on partition is severe. We are reminded that this is one difference in which there has been no Soviet veto with which to contend. The close analysis of our course of action on Palestine is embarrassing. The view of our policy and of the effect on our country and the union of countries of this whole question is far from quieting. As set down by Mr. Welles, by pursuing a certain line, we need not fail.

—W. G. B.

WARPATH AND COUNCIL FIRE. By Stanley Vestal. Random House. $5.00.

Stanley Vestal, who in private life is Walter Stanley Campbell, Professor of English at the University of Oklahoma, and author of a number of books on American Frontier History, has written another excellent book on the campaigns of the Plains Indians during the period 1851 to 1891. Marching through its pages are the great figures, both white and Indian, who lived those years of struggle. This is a story for the person interested in American History, the military and straight adventure.

* * *

GETTYSBURG. Edited by Earl Schenck Miers and Richard A. Brown. 308 Pages. Rutgers University Press. $3.50.

There is a fiction style to *Gettysburg*. The treatment is pleasing; much different from usual war history. A substantial story is told from other than the straight military viewpoint. There is an intimacy with the conflict that is not found in pure military documentation. This has the basis of human emotion in it, with the reader plunged deeply into the feel of Gettysburg and walking the events to the finish.

In the early pages of the book the military reader may feel somewhat annoyed by the lack of detailed maps and dispositions to complement the text. That feeling tapers off as the grip of the story embraces the reader and the realization comes that this is not that kind of story. Harold C. Detje's maps are entirely adequate to the purpose of this story. They are graphic representations falling neatly into character.

The wide variety of sources drawn upon in the assembling of the story includes young and old, male and female, civilian and soldier, senior and junior, Blue and Gray. The composite result is unique war history. The frank analysis in history touching upon the personalities of military commanders and their relation to ability and to their men is interesting. Positive and negative factors stand forth, and this kind of thing may well set a pattern in the military scheme today.

War today embroils a greater number of Billy Baylys and Sallie Broadheads than did war in their time. The people of Warsaw, Manila, Stalingrad, Rotterdam or Leghorn could tell endless tales of the war, and the people of Jerusalem not so many days ago. How all-inclusive war has become! Today's battles could hardly be written of with the detachment of the civilians fringing the Gettysburg field. It is something to ponder, the effect such accounts of war as these will have on the future of war.

* * *

DUNKIRK. By A. D. Divine. E. P. Dutton. $4.50.

Dunkirk stands out among the famous evacuations of history by virtue of the fact that it was unplanned, "a brutal, desperate adventure forced upon us by the most dire disaster, carried out under the eyes of an enemy flushed with victory . . ." It was a triumph for all concerned. This book tells in detail how 338,000 men were lifted from the beaches, a good ten times the supposedly generous estimates of those who ventured to guess. You'll live every page.

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1	1	1	1	The Naked and the Dead. *Mailer*
3	3	3	2	The Golden Hawk. *Yerby*
2	2	2	3	Pilgrim's Inn. *Goudge*
5	4	4	4	Peony. *Buck*
11	7	7	5	The Foolish Gentlewoman. *Sharp*
4	5	5	6	Raintree County. *Lockridge*
			7	Melissa. *Caldwell*
	14	11	8	The World Is Not Enough. *Oldenbourg*
6	6	6	9	Parris Mitchell of Kings Row.
7	9	8	10	Bright Feather. *Wilder*
10	10	14	11	The Bishop's Mantle. *Turnbull*
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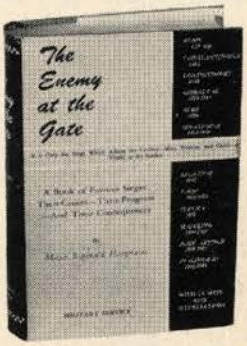

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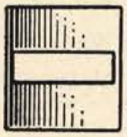

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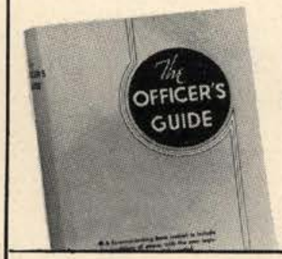

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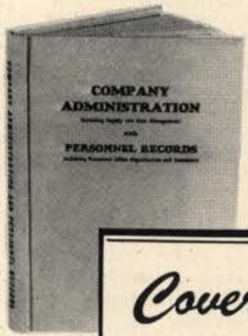

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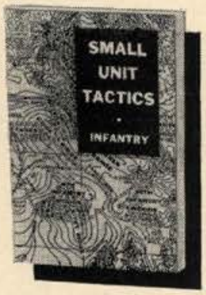

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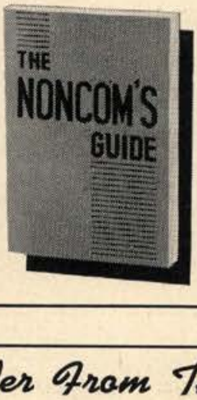

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8th Armored Division	Published	Unknown
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11th Armored Division	Just published	$5.00
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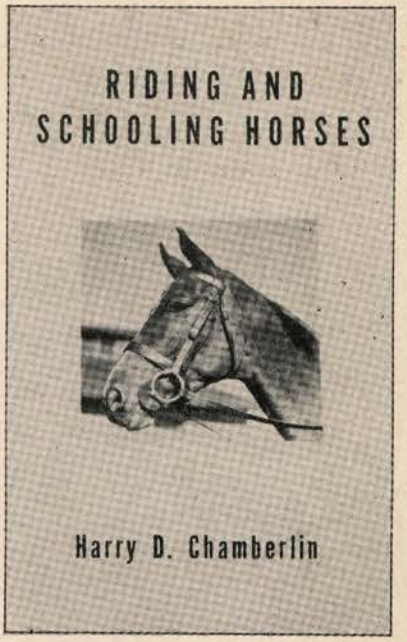

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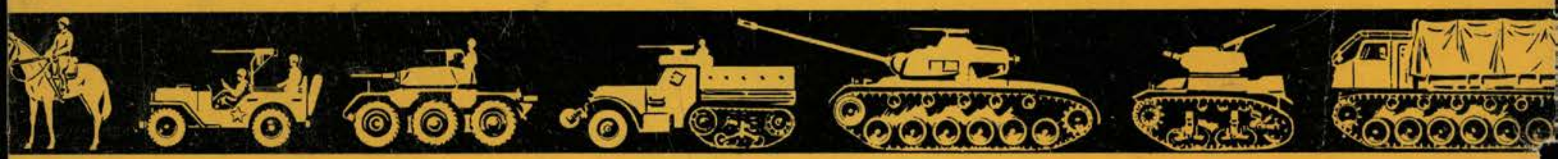

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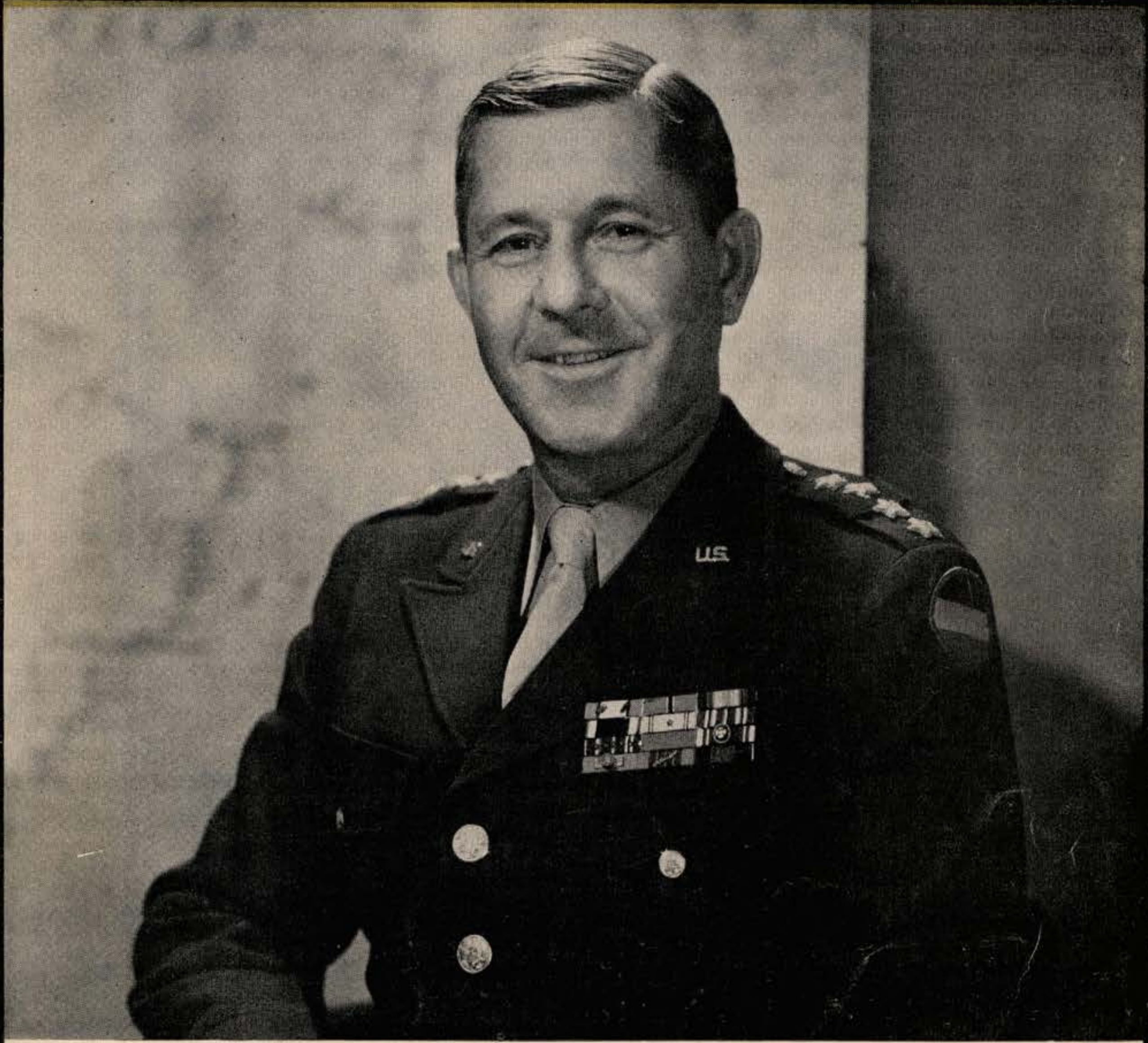

GENERAL JACOB L. DEVERS
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(SEE PAGE 5)

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Armored Cavalry Journal

Published Bimonthly by The U. S. Armored Cavalry Association

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Volume LVII SEPTEMBER-OCTOBER, 1948 No. 5

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Publication date: 25 September 1948. Deadline date, next issue: 15 October, 1948.

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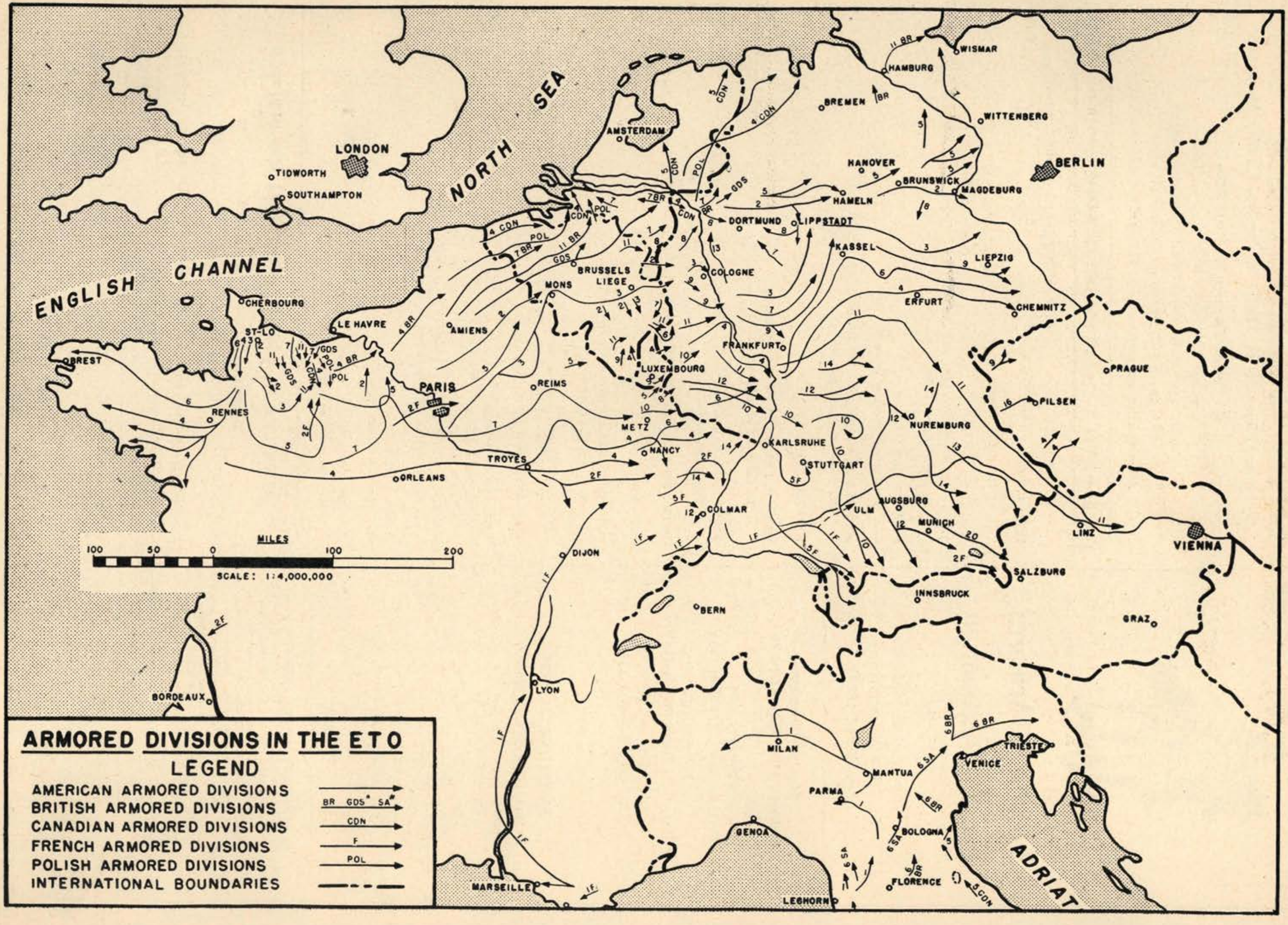

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THE FUTURE OF ARMOR

by General Jacob L. Devers

Chief, Army Field Forces

THE weapons of warfare have changed through the ages, but the principles of warfare, which dictate the employment of weapons, have remained substantially the same. Of all the weapons which have come to hand, there is none, not even the airplane, which lends itself more readily than armor to the application of *all* the principles of winning warfare.

The generic term armor, of course, includes the whole of the armored team—the light, medium and heavy tanks of the armored cavalry, the armored infantry in personnel carriers and the self-propelled artillery.

In the selection of an *objective* which is to be seized and physically held, only the airborne commander is afforded a wider choice than the armored commander. Even so, for the consolidation and exploitation of that objective, he is today dependent upon the arrival of his attached armor by land or sea, and will tomorrow await armor by air as well as land or sea.

As for maintaining or regaining the *offensive,* it was armor, almost without exception in World War II, which gave our commanders this capacity, and prevented costly repetition of the static combat of World War I. Armor is equally preeminent in the practice of the allied principles of *mass, movement, surprise,* and *simplicity*.

This emphasis on the advantages of armor does not in any way detract from the credit due other ground arms, and the sea and air forces, for their contributions toward victory in the last war. But armor possesses to a marked degree the advantages of *economy of force* and *security,* both principles of major importance in any conflict. Comparison of armored division accomplishments with casualties per day of combat gives striking evidence of efficient utilization of manpower, plus added security for units as well as individuals.

And, lastly, it is in *cooperation,* in basic battleground teamwork, that armor completely fulfills the final principle of warfare. On the working level, armor helps infantry realize its greatest potential, infantry complements armor, artillery supplements both. World War II demonstrated the invincibility of the United States Army's infantry-tank-artillery team; any future war would prove the same combination an even better bet, no matter what the odds, because of the improvements we have already effected and those we are in process of achieving, in both organization and matériel.

To take full advantage of the potentialities of armor from all of these aspects, its role in the field forces is being emphasized heavily in current training, and would be stressed even more strongly in the event of a future mobilization. We envision a field army organized on the basis of one armored to three infantry divisions; each infantry division would have organic to it the equivalent of two heavy tank battalions, and each corps would have one light armored cavalry regiment and one heavy tank group—a total of more than three thousand tanks in an Army of three corps. Each airborne division, too, would have attached to it two tank battalions, and we may hope that, in time, some or all of these tanks will be air transportable.

The future of armor is limited only by the ingenuity of American industry and the resourcefulness of the officers and enlisted men who belong to armored units. To those qualities there are no limits—nor are there to the future of armor.

★ ★

CARDED

ARMOR EXPANDS THE AIRHEAD

by Major General Clovis E. Byers

ARMOR IN THE AIRBORNE FORCE

THE time is fast approaching when armor will be as much a part of an airborne force as it is of the ground force of today. The development of the equipment to arrive at this end will not be a matter of "natural course," but will result only from a great deal of directed work on the part of a great many people. The requirement for armor in the airhead is so apparent to the military mind that every nation which is conscious of the need for getting ahead, or at least keeping abreast of the trends of the times, will put the best of its military minds and technicians into the development of the necessary equipment and the technique of its use.

The concept of the "flying tank" is not new. The advantages to be gained from its use were seen before and during the recent war. Efforts were made to bring into realization the idea of a tank which could be carried in an aircraft and which would be of sufficient serviceability to warrant the air-lift cost necessary for its transportation into an airhead. Thus far, efforts along this line have not been of great success. It is one thing to build something resembling a tank that will fit into an airplane and quite another to have that vehicle sufficiently battle-worthy to be worth its salt when it gets on the ground and into combat. On the other side of the picture, there are several models of battle-worthy tanks, but few of them can be lifted by even the larger development-type planes of today much less be brought early into an airhead. We are approaching, but have not yet truly crossed the bridge between the ground use of armor and its utilization as a part of an airborne force.

While we are still on the "near side of the bridge," we must consider joint airborne-armor operations as they would be today if war should come soon. Speculation on the utilization of armor in a purely airborne sense is a more interesting question, but its consideration should not preclude thought on joint armor-airborne action in a battle involving use of today's equipment only.

The history of World War II reveals that airborne units, after the establishment of an airhead and juncture with advancing ground troops, have habitually continued in the fight. Current trends in organization appear to anticipate further commitments of this nature. Without going into considerations of the essential desirability of such commitments, it seems improbable that we will ever become so rich in troops that airborne units can contemplate only short periods of combat following a drop with the prospect of early relief. On the contrary, it seems more likely that the utilization of airborne units following their juncture with the ground troops will be assumed in the planning for the post-airborne operation in order that the maximum strategic effect may be obtained. The place of armor in operations involving any ground exploitation is an important one. With these considerations in mind, airborne units should not be denied familiarization work with armor in their training, nor should their commanders and staffs concentrate thought on airborne and infantry techniques to the exclusion of operations involving cooperation with armor.

AIRHEAD RECONNAISSANCE FOR ARMOR

To facilitate the use of armor in the expansion of an established airhead after juncture with the ground

A sorely needed and factual presentation of the Airborne-Armor problem by one of our foremost field commanders.

troops is made, the over-all plan must contemplate the most advantageous use of the armor which will be available. More often than not, perhaps invariably, tank units will be attached to airborne units in any exploitation phase. It may be that the same tank units will habitually move in to reinforce the airborne divisions which have dropped and have successfully secured an airhead. Under such circumstances, it should be standing operating procedure for elements of such armored units, particularly commanders and certain control and reconnaissance elements, to drop or glide into the airhead well in advance of the arrival of their units by ground. Thorough orientation and briefing of such personnel would greatly facilitate the efficient entry of their units into combat. Advanced arrival of such key personnel is not classifiable as an interim requirement; after armored elements have become a normal part of an airborne force, it will be desirable to bring commanders and reconnaissance elements into the airhead even earlier in order that, during the most critical hours of airhead development, they can make the combat weight of the armor felt at the earliest possible moment and in the best possible direction.

The tanker, like the airborne infantry soldier, is of use only in ground combat. There has been no great thought on the matter of the utilization of either the tank or the infantryman in the air or en route from the air to the ground; proper utilization contemplates only use after arrival on the ground. The tactical use of armor in conjunction with true airborne operations is, therefore, no different in its essentials than the use of armor in any other type of ground operation. The difference is one of strategic transport and not of tactical use.

Development In Armor

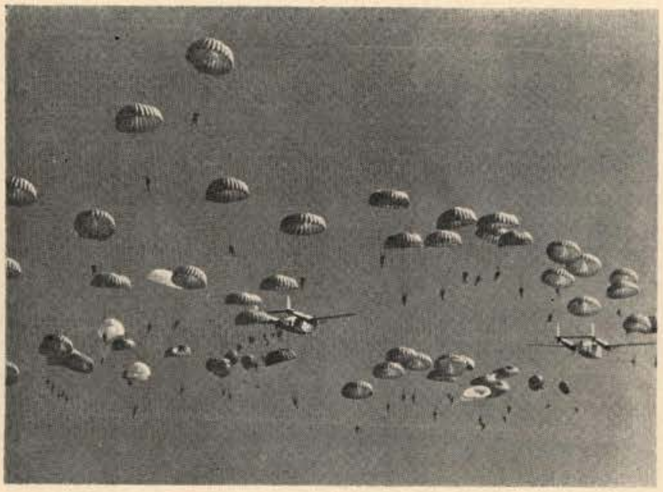
The development of armored vehicles thus far has not been severely inhibited by strategic movement limitations. Neither the railroad, the military bridge, the highway, nor the ship have placed crippling limitations on tank development. On the contrary, each has tended to adapt itself to the transportation of heavy armored equipment. Nor have such adaptations been of surpassing difficulty. In contrast, the airplane has been developed primarily for speed and maneuverability and, until fairly recent years, its load-carrying capacity has been a distinctly secondary consideration. While tremendous strides have been made during the past twenty years, it will still be a number of years until the best of armored equipment can be readily carried by air.

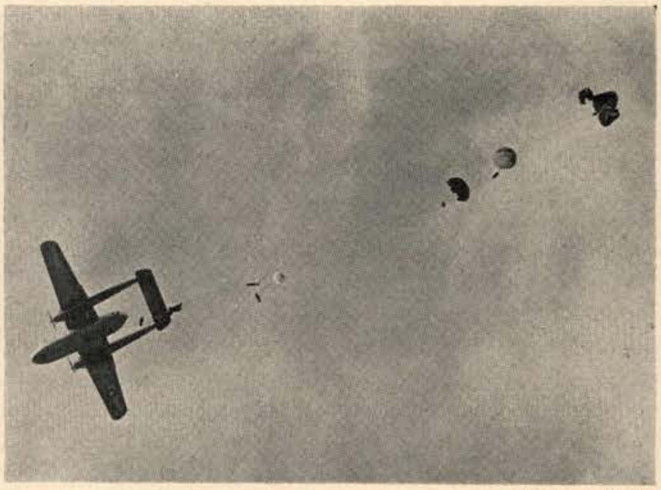
The first of modern tanks, if such they can be called, were brought to the battlefield in World War I, when the airplane was a fairly well accepted tool of war. In a way, the tank is a newer weapon than the airplane. The tank, as an automotive vehicle, and the techniques of its use in battle have been developed in the hot test of combat. Men of many nations have given their best to develop armor and its tactical use along the most efficient lines. True, it has been developed primarily for use as a ground weapon and not as one to be air-transported; it will be still a ground weapon when it is landed in an airhead—and that is its proper use. It seems entirely safe to say that the types of tanks and other armored vehicles developed for ground combat as a result of the experiences of the past two wars, and the past short periods of peace, have been along the lines required by the necessities of combat, and no pressure can be greater than this. For purposes of ground combat, the armies of the world have had, and will have in the future, the best of types of armor that the ingenuity of man can develop. If our army could be assured of having the newest types of armored equipment and armored organizations in the next airhead operation, we could be virtually assured of the early grasp and long retention of the initiative.

It seems apparent from the identical nature of the ground operations of infantry and airborne troops, that

Major General Clovis E. Byers attended Ohio State University and graduated from the United States Military Academy in 1920. His further schooling included the Basic and Advanced Courses at the Cavalry School; the Command and General Staff School; the Army War College, and the Parachute School at Fort Benning. His service includes duty with the 1st Cavalry Division, the 2d Infantry Division and VIII Corps Area Headquarters: two tours at West Point, and assignment to the War Department General Staff.

When war broke out General Byers went to troop duty, and served successively as Chief of Staff of the 77th Division, I Corps, and Eighth Army. He made the D-day landing at Atsugi Airfield, Japan, and remained in the Far East until January of this year. He is now Commanding General of the 82d Airborne Division, Fort Bragg, North Carolina.





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armor suitable for one would be most suitable for the other. We cannot say that we have mastered the problem of transporting armor into an airhead until we arrive at the point where airborne armor is the best type of armor that can be developed for ground combat. Any other measure and any other line of development can be only interim in nature: the ideal solution is an apparent one.

STRIKING A MEAN

The possession of armor of some type by an airborne task force promises to give an obvious advantage to its possessor. As we cannot carry the best armor in with aircraft to be developed in the near future, what is the next step? There must be some compromise on the part of the designers of armor if we are not to be left behind, as an army, in the race that must now be in progress. It is basic that such armor as is brought into an airhead must be of such value as to make it worth its transportation and its support. The cost of air transport precludes a lesser solution.

The problem of loading a tank into an airplane is more one of weight than of size. The army which first succeeds in airlanding armor will be the one which first solves the problem of ridding the tank of all but its most essential weight-creating characteristics. Where can we best commence to "whittle" on the tank and, at the same time, insure that battle-worthy equipment will remain after we have finished whittling?

The most essential characteristics of the tank are its big gun, its ability to carry ammunition for that gun and its cross-country mobility. To sacrifice any of these in measurable degree would mean that the very characteristics which make the tank most desirable as a new weapon in the airhead would have disappeared. The airborne tank must be able to meet the ground tank on at least approximately equal terms if it is to be worth the pay load it consumes in being air-transported into the airhead. Its transportation cost, in terms of airborne pay load, requires that it be a valuable weapon.

The heavy armor of the tank, though only one of its weight-creating elements, is, perhaps, the characteristic most susceptible to reduction for airborne purposes if reduction we must have. The success of thick armor as a defensive measure in the protection of the tank crew is a relative matter only; modern tank guns can pierce, at considerable ranges, the thickest armor thus far used on tanks. Heavy armor assuredly adds to the confidence and general morale of the tank crew which it protects. Their aggressiveness is heavily dependent upon the efficacy of the armor which protects them. In considering reduction of tank armor, it must be realized that the aggressiveness of the tank crew will be perceptibly reduced. A tank will depend in increasing degree upon the protection afforded by its maneuverability and by the terrain when its armor is insufficient to insure a high degree of protection to the tank crew.

Since we cannot have the best of tanks in the airhead for the time being, let us plan to accept a tank which has a gun capable of penetrating the armor of the medium tank types at modern tank-fighting ranges, the capacity to carry ammunition sufficient to last through an average day of combat, the capacity to carry the very minimum of crewmen necessary for the operation of the gun and the tank itself—probably a three-man crew—a high degree of mechanical reliability and sufficient armor to protect the tank from anything but a direct hit by weapons of major calibers. In order to give the tank crew reasonable protection from the immense amount of miscellaneous fire which tanks draw, sufficient armor should be required to protect the crew and the most vulnerable parts of the tank from major fragmentation from high explosive shell, and from small-arms fire at any range. Acceptance of such a reduction in crew and armor should be sufficient to serve as a basis for further development. Matters such as tank profile, crew comfort and the carrying capacity for many miscellaneous articles must also be sacrificed in the interest of weight saving. The hard-hitting gun, cross-country mobility and mechanical reliability are the factors which must remain firm in the quest for characteristics of any type of tank and they are as essential to the airborne tank as to any other type.

Use In Airhead Operation

The development of a satisfactory airborne tank is not a matter of months but of years. It is apparent that the development of a tank of this type would parallel, in time, the development of aircraft capable of both carrying it and landing it in an airhead containing such a landing strip as could be constructed by airborne engineers in a matter of a few hours. Such tanks could probably be landed even earlier in the assault should it be thought that their value in the first hours would compensate for the loss of the aircraft which would crash land them.

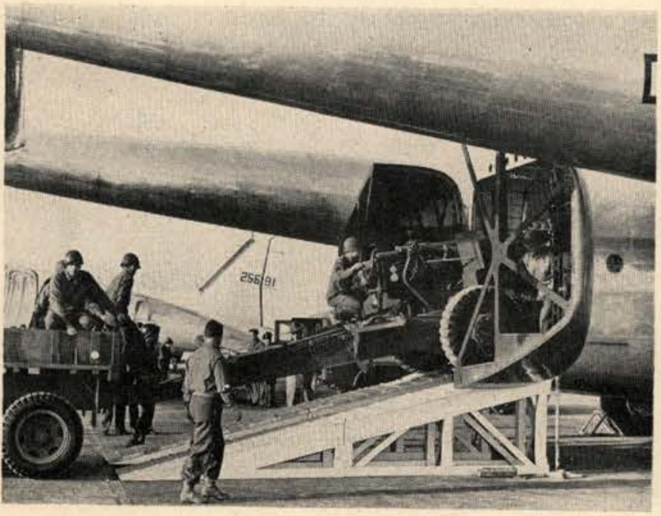
Assuming, for the moment, that we have such a tank, what is to be its tactical use in an airhead operation? And what will be the effect of its use on the defense?

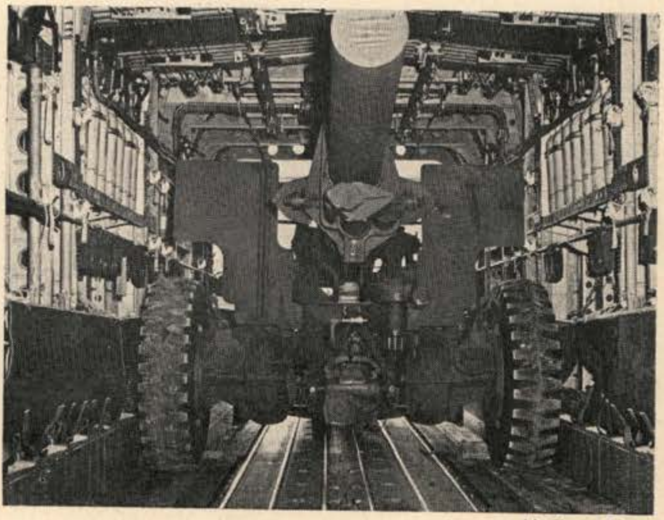
In the search for answers to these questions we find ourselves at the opposite end of the same general question: a complete knowledge of the capabilities of the vehicle is essential to the proper determination of its tactical use. In general terms, it is safe to assume that some armor will be landed as early in an airborne operation as the nature of its transportation will permit. A basis for comparison is found in the amphibious operation; there, armor is commonly landed early among the assault waves; also, it forms a substantial and important part of supporting elements. It is entirely conceivable that a small airborne tank might be landed with the first elements of airborne infantry; the Rhineland crossing indicated that, under some circumstances, landings can be simultaneous with drops. Perhaps a more common method will be to permit the parachute infantry to secure at least a small area prior to the landing of large tank-carrying aircraft. A common type of operation might include the crash-landing of some small armored elements at about P+2 hours and a quick attack in a predetermined direction over ground which has been reconnoitered only by air-photo.

Counter Measures

Much depends upon the dispositions of the defense. The effect on the development of the capability of landing armor in an airhead will have a most profound effect on the tactics and strategy of defense. The necessity for a defending nation to maintain troops in reserve fairly thickly scattered throughout the communications zone and the zone of the interior, and, also, of maintaining heavy mobile antitank defenses throughout same areas will tend to stretch the defense far beyond present concepts. However, this can be expected to happen as soon as the airborne tank becomes a reality. Following the realization of the necessity for such a defense, nations will include in zone of interior defense, tank obstacles which can be thrown up hastily as well as the addition of antitank weapons that have been sited throughout the vulnerable area among strategic reserve units. Such defensive measures can only limit, not defeat, the initial attack of the airborne force. Once on the ground and reorganized, the airborne force which includes tanks can move rapidly and effectively wherever the terrain will support armor.

While the desirability of getting the best of armor into an airhead can hardly be seriously contested, a more difficult question arises in connection with deciding where, in the interim program, we can arrive at a point in development of the airborne tank when it will be a better weapon, in the airhead, pound for pound, than anything else that can be taken in. The question resolves itself into one of relative desirability for airhead combat utility: Should a large aircraft with its carrying capacity measured in tons be entirely devoted to





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bringing in a tank and its crew, or should the same aircraft, capable of carrying many infantrymen with their weapons, be instead devoted to that purpose? Or will that much additional tonnage in artillery and ammunition be of more use? Or more mines and other antitank weapons?

MEETING THE NEED

Combat experience has revealed that armies will make every human attempt to bring into battle the weapons which they most need to accomplish their missions. And if such weapons are not available, they will make every attempt to invent and produce them and to create the means to bring them into battle. Historical precedent is surely one of the best measures of the probability of future action of this nature. Again referring to amphibious operations as a comparable example, it is surely most difficult to bring armor early on to a defended beach. However, it was found to be so highly advantageous—almost essential—to the success of such operations that armor be brought on to the beach, that ways and means were found though tonnage restrictions were severe in nearly all amphibious operations. Even new types of tanks were developed to conquer particular beach and water conditions. A parallel development must be expected for air transport of armor. The fact remains that there are certain jobs which armor can do far better than any number of unarmored, walking infantrymen or any combination of infantry and artillery.

The development of the bazooka and panzerfaust type of weapon was highly advanced during the latter stages of World War II, especially by the German Army; nevertheless, the German Army made every effort to keep its tanks at the front and operative, though it was on the defensive, and though its hand antitank weapons were present in great numbers and in the hands of all types of combat units. Obviously, the German Army felt strongly that the tank was needed in addition. It is altogether too easy, in time of peace, to work out battle problems so as to arrive at logistically easy solutions. In war, it is entirely different; there, the primary rule is that of necessity. Theoretical considerations go by the board in the tight atmosphere of combat and the economy-based conclusions of the logisticians bow to the superior necessity of maximum combat effectiveness.

Experience in recent wars indicates that armor will be used in ground combat wherever the terrain will permit. The tank has proven its value both in the defense and the offense. In World War II, the German Army carried the initiative and had a predominance of success as long as its tanks outnumbered those of the Allies; in the last stages of the war, when the reverse was true, the Allies scored consistent ground successes though the superiority of German armament both as to tank quality and hand antitank weapons as a means of combating tanks was indicated during the last two years of World War II.

A NEW PUNCH

The introduction of armor into airborne operations may well enlarge the capabilities of airborne task forces. Missions previously thought impracticable will become worth while attempting.

Assuming the availability of a tank such as that described above for the airborne operations of the next war: we will have given the airborne force the punch that it needs and which it has previously had only insofar as punch can be furnished by the superior type of fighting man which the airborne soldier has proven himself to be. We will not be substituting mechanical power for guts, but adding it. We can then plan to advance quickly to objectives distant from the drop zones during the first few hours of the assault instead of during the first few days. In the airborne assault we would have the same capability of rapid seizure of an airhead and its initial rough and rapid development as we have now, and we would also have the capability of an adequate defense against counterattacking tanks. Enemy tanks could then be held at arm's length; with his present weapons, the paratrooper must wait until enemy tanks approach to within a few yards when much damage may have already been done. With the airborne tank, we could advance many miles in the early stages of the assault against the minor opposition which an enemy under attack by an airborne force can usually put up during those first few hours of the assault. If our mission is to seize and to hold, we can reach out much farther initially and gain much more maneuver space for the defensive battle which is to follow. If exploitation from the airhead by airborne troops is in order, we have the best ground weapon of exploitation.

THE LOGISTICAL ANGLE

Unquestionably, air re-supply is made more difficult by the presence of armor in the airhead. The logistical requirements for the support of tanks are staggering in terms of tonnage. However, it is worth while to analyze the essential supply requirements of the tank closely in order to consider properly the feasibility of its airhead re-supply.

There has been much discussion relative to the desirability of continued air re-supply of the advancing American Third Army during 1944. It has been contended that the advance of this army, heavy in armor in terms of armored divisions, could have been continued beyond the Rhine had the air lift then available been devoted exclusively to its support. Without going into the long-standing arguments which lie around this question, it is sufficient to observe that it is no new thing to support large numbers of tanks by air re-supply. Though the basic loads required to support the initial stages of an armored operation are substantial in terms of tonnage, the character of the operation determines the nature of later support. If the operation is defensive in character, considerable ammunition is used and comparatively little gasoline; if offensive, much tonnage in gasoline is required, but little in ammunition. In actuality, the amount of ammunition fired by tanks during the average day is usually far less, even in the defensive, than that fired by a comparable number of artillery pieces. However, no one has suggested the possibility of leaving artillery out of an airborne operation because its support is a difficult matter. And should the airborne operation develop into one of exploitation, it is fairly reasonable to assume that a sufficiency of gasoline to support quite a number of armored and other vehicles can be expected to be overrun and made available from captured supplies.

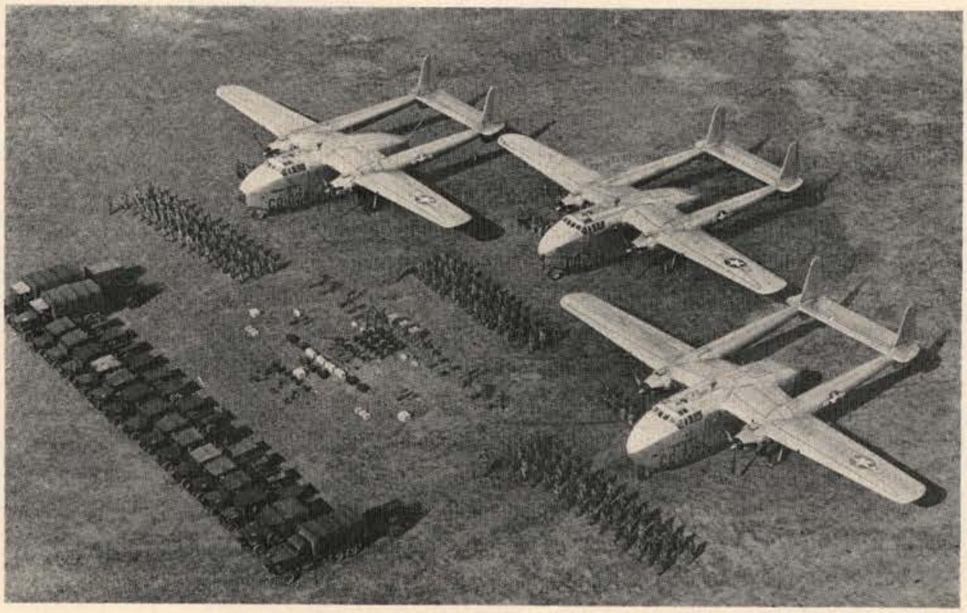
TEAM MISSIONS

The airborne task force of the future will be as hand-tailored for its task as any task force of the past. The initial objectives and the approaches to them from the drop and landing zones will determine the advisability of crash-landing tank-carrying aircraft with early assault elements. Operations can be far more successful if casualties are kept at a minimum and this can best be done when the proper tools are brought into the battle. If it is a choice between the loss of several plane loads of infantry on a rough combat mission or on a rough drop zone, as against the alternative of bringing in an equivalent weight in armor and the lessened infantry losses which accompanying armor assures, the decision should not be a difficult one for any leader.

Let us assume the crash-landing of a platoon of tanks which will facilitate the early capture, by the airborne task force, of an important terrain objective. The very presence of tanks in the initial airhead will add to the confidence of the infantry and to their effectiveness in the attack. It will also add immeasurably to the discomfort of local enemy defensive forces and to their tendency to give in with great rapidity.

After the initial essential terrain objectives have been secured, a rapid exploitation can be commenced immediately. Rapid movement to and seizure of terrain features necessary for the most efficient defense of the airhead can be greatly facilitated by the ease with which even a few tanks can overrun the minor opposition which a surprised enemy can raise.

The initial airhead having been thus secured early during the day of the initial drop and landing, airborne engineers will quickly clear a sufficiently usable landing strip for the tank carrying track landing gear aircraft which can follow within a few hours, perhaps during the early hours of D+1. Early expansion of the airhead will have uncovered additional drop zones so that the landing of armored and other heavy elements can proceed simultaneously with reinforcement of the infantry by further parachute drops. The pace of the build-up in armor will be maintained parallel with that of the infantry. In a matter of hours, not of days, we will have a strong, balanced ground force landed and a large airhead, great in area, though not heavily defended except at critical points, wherein further landings can be made with considerably less interference from enemy artillery fire than a smaller airhead would provide. This airhead will be maintained by an active defense, the backbone of which will be a strong reserve of tank-mounted infantry. The defensive lines of the airhead will not be limited by the capabilities of the infantry to seize ground rapidly; armor will have enabled them to reach out to better lines from which an initially tough and later active and elastic defense can be conducted.



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THE END IN VIEW

The transport aircraft and the tank have gone their separate ways long enough. They must be made to work together to serve a common purpose. When this end is truly attained, the airborne task force will have made its most significant advance in combat effectiveness.

SOLDIER MANAGEMENT

by Brigadier General Bruce C. Clarke,
Ass't Commandant, the Armored School

Preface

WHEN I was asked to address the graduating class of West Point on leadership some time ago, I chose as my subject, "Soldier Management from the Viewpoint of the Company Officer." As is the usual procedure, I jotted down a few pertinent remarks covering the points I wished to discuss. Then I rearranged them in the order in which I wished to present them and came out with an outline of the address. My talk, then, was given from this outline. The points I had written down were used generally as the topic sentences for each paragraph, the body being filled in ad lib with examples, or elaboration from my personal experiences.

Later I was asked to write an article on the same subject. I got out the outline that I had used for my West Point talk and considered expanding it into an article. Then the thought occurred to me that the bulk of such an article would be a recital of some of my own experiences; that practically every officer of a few years' service has a wealth of similar experiences, many undoubtedly more pointed than mine; and that the finished article would sound like the tales of an old soldier. Then the conclusion was reached that if I could hang my experiences on such an outline, others could possibly do the same.

* * *

An Outline

1. INTRODUCTION. a. From the company officer's viewpoint, soldier management and leadership go hand in hand. The purpose of this outline is to assist the young officer in his everyday problems of handling and managing soldiers.

b. There were fair, good, and outstanding units of all echelons in the past war. Primarily this variation in units was in direct ratio to the qualities of leadership displayed by the unit officers.

c. Leadership which produces success in battle can easily be adapted to other activities and produce equal or greater success.

2. WHAT MEN EXPECT FROM THEIR LEADERS. a. Men have a right to expect from their leaders:

(1) Honest, just, and fair treatment.

(2) Consideration due them as mature, professional soldiers.

(3) Personal interest taken in them as individuals.

(4) Loyalty.

(5) Shielding from harassment from "higher up."

(6) The best in leadership.

(7) That their needs be anticipated and provided for.

(8) All the comforts and privileges practicable.

(9) To be kept oriented and told the "reason why."

(10 A well-thought-out program of training.

(11) Clear-cut and positive decisions and orders which are not constantly changing.

(12) Demands on them commensurate with their capabilities—not too small or too great.

(13) That their good work be recognized—and publicized where appropriate.

b. To the military leader, men are tools. He is successful to the extent that he can get the men to work for him. Ordinarily, and on their own initiative, people run on only 35% capacity. The success of a leader is measured by the extent to which he can "tap" the other 65%.

c. It is the men below who make or break an officer. Sometimes, but not often enough, those above recognize what the ones below do for them in this respect. Regardless of the recognition the officer should not lose sight of the basic truth.

3. SOME POINTERS ON LEADERSHIP. Some people are natural-born leaders. Others, possessing the ordinary attributes, can be fine leaders through the observation of certain procedures. Some of these are:

a. Almost every man wants to do what is expected of him. When he does not do so, it usually is because he has not been properly instructed.

b. Men admire a strict officer if he is also just.

c. An officer who tries to be a "good fellow" loses his grip early.

d. A new officer cannot be easy at first and then get strict. He can, however, be strict at first and then ease off as circumstances warrant.

e. Company and platoon leaders should know every man in their organizations.

f. Men must look to their titular leaders for rewards and punishments. The company commander, himself, must decide who shall be promoted. He can and should accept recommendations, but it must never be thought that he rubber-stamps the first sergeant's list. The company commander personally assesses company punishment, not the first sergeant.

g. One should be able to select competent subordinates. If the commander makes a mistake in choice then the man should be replaced. Do not carry deadwood along for fear of admitting an error in selection. Handle your own mistakes; do not pass them along.

h. An officer should not look for cheap popularity with his subordinates. They do not begrudge him his rank, pay, or prerogatives if he uses them in the interests of his subordinates and superiors.

i. Military courtesies start between officers. Observation of these courtesies between seniors and subordinates is not belittling to either; they are evidences of *alertness*, pride, and good manners.

j. It is not being undemocratic for an officer to use an orderly if the officer uses the time thus saved to look after the welfare of his men and to do his job better. An officer can expect the same attention from his men that he gives them—it works both ways.

k. The officer should give orders in a manner which indicates he expects compliance. He should be clear and positive and should follow them up.

l. An officer should not issue orders which he cannot enforce. Along that line, it is a wise officer who does not take official notice of something he cannot do anything about.

m. An officer must develop initiative in his subordinates. They learn by doing. In so learning they make mistakes. Learn to *underwrite the honest mistakes* of your subordinates.

n. An officer must not belittle the importance of his subordinates. He must give them responsibilities and then back them up. A good officer does not by-pass subordinate commanders. He uses his NCOs and adds to their prestige by so doing.

o. An officer should be as good as his word. He should not make promises of rewards and punishments he cannot fulfill. He should fulfill those he makes.

p. A good officer will know the names, background, and individual characteristics of his men. He must have a genuine personal interest in them or they will not have it in him. Each individual has problems. There is no easier way of getting a grip on men than by helping them to solve the personal problems that give them great concern.

q. Be enthusiastic and cheerful. These attitudes in a leader, as well as their opposites, are contagious.

r. Do not be familiar with your men. Good soldiers do not expect it. It is not necessary to call your men by their first names or nicknames even if you sleep in the same foxhole with them. Doing so does not increase your leadership ability or your grip on your men.

s. Morale is a natural product of good leadership. Morale is not produced by USO shows, etc. Diversions are important, however. Good morale comes from doing well a worth-while job and receiving recognition for it.

t. Every man experiences fear in a crisis. The leader cannot show it. He must fortify himself with a scale of values which enables him to control his emotions. The only fear that should worry a good leader is the fear of being afraid.

u. Do everything you can to increase the personal pride of your men. Cleanliness, neatness, and orderliness are evidences of personal pride. A proud outfit is a good outfit.

v. When a man has punishment coming to him be sure to give it to him, but in an impersonal way and to a degree that fits the circumstances and the offense. When he pays his debt, forget the incident.

w. Listen to the suggestions of your subordinates. If they are adopted pass on the credit to them.

x. Be intellectually honest. An officer cannot be expected to know everything. He cannot bluff his men and retain their respect. When he does not know he should say so.

y. Be loyal. Criticism of your superiors in front of subordinates lays you open to the same treatment. Remember, loyalty works both ways.

z. Rank should be used to serve your subordinates. Rank is not a reward nor a license to exercise your idiosyncrasies. Rank has one object: to enable the officer to fulfill his responsibilities.

aa. An officer's presence when the conditions are unpleasant and when the going is tough—"sharing the situation with the men"—is all-important.

ab. Above all, set the proper example. Men will look to the officer for their model. The higher the rank the greater the obligation to those below to set the proper example.

4. CONCLUSION. Basis of the officer-enlisted man relationship in the American Army. We have heard the charge that the officer-enlisted man relationship is based upon the Prussian system as brought to this country by Baron von Steuben. There is nothing wrong today with the following instructions written by Baron von Steuben at Valley Forge and published by the Continental Congress. It is when we get away from them that we get into difficulties.

"INSTRUCTIONS FOR THE CAPTAIN"

"A captain cannot be too careful of the company the state has committed to his charge. He must pay the greatest attention to the health of his men, their discipline, arms, accouterments, ammunition, clothes, and necessaries.

"His first object should be to gain the love of his men by treating them with every possible kindness and humanity, inquiring into their complaints, and when well founded, seeing them redressed. He should know every man of his company by name and character. He should often visit those who are sick, speak tenderly to them, see that the public provision, whether of medicine or diet, is duly administered, and procure them besides such comforts and conveniences as are in his power. The attachment that arises from this kind of attention to the sick and wounded is almost inconceivable; it will, moreover, be the means of preserving the lives of many valuable men."

"INSTRUCTIONS FOR THE LIEUTENANT"

"He should endeavor to gain the love of his men, by his attention to everything which may contribute to their health and convenience; he should often visit them at different hours; inspect into their manner of living; see that their provisions are good and well cooked, and as far as possible oblige them to take their meals at regulated hours. He should pay attention to their complaints, and when well founded, endeavor to get them redressed; but discourage them from complaining on every frivolous occasion."

CARDED

Armor and Amphibious Warfare

From a member of the Staff of the Commander Amphibious Force, Atlantic Fleet, comes a discussion of the role of Armor in Amphibious Operations.

by Major Francis J. Roberts

GENERAL CONSIDERATIONS

ANY probable opponent of this nation in the event of another World War will possess greater strength in manpower than will this nation. The advantage that will insure us of victory once more continues to rest on the mechanical aptitude of our citizenry and in the tremendous industrial potential of the United States.

We can supply, maintain, and employ fast, hard-striking forces—be they on land, on sea, or in the air. In the case of amphibious warfare these are all interwoven to bring about the successful amphibious landing or invasion.

One of the greatest striking forces the armed services has is its armored elements. Not only will these armored forces be employed to a greater extent in land warfare during future conflicts, but they will also take a more important place in Amphibious Warfare.

Major Roberts has had much practical experience in Amphibious Warfare and as a member of my Joint Staff for the past two years he has made valuable contributions to the constant progress required in meeting new materials and techniques. This article by him presents a broad concept in which I concur. My own respect and admiration for the Armored Cavalry lead me to favor its employment in Amphibious Operations wherever conditions and situations permit. The striking power of an armored division, together with its excellent communications which are particularly suited to work with air and naval gunnery support, make it a valuable organization for amphibious operations, in spite of the problems of transportation and landing. The latter are not unsurmountable but I quite agree with Major Roberts that the Armor should follow an initial assault landing by the infantry and land on a beach sufficiently well secured to insure its further advance to the objective.

R. O. DAVIS★
Rear Admiral, USN
Commander Amphibious Force Atlantic Fleet.

Rear Admiral R. O. Davis

Armor is an offensive weapon. An amphibious operation is offensive in character, inaugurating an invasion of enemy-held territory by approach from the sea. In the next war amphibious landings may have to be made on any continent, either from choice or necessity. Needless to say, there are untold areas on each continent where terrain is ideal for employment of armored forces. Under these conditions armor must and will be a part of the successful Amphibious Task Force.

Once having selected a landing area backed by terrain suitable for employment of armor, what will be the relative proportion of armored elements in the expeditionary troops of the Joint Expeditionary Force, and how will these armored units be employed initially? Here, before going further into discussion, it may be well to review certain basic definitions in order to assist those readers who are not familiar with Amphibious Operations.

TERMINOLOGY

First of all, an *Amphibious Task Force* denotes in a general way any size organization whose assigned task is of an amphibious nature. A *Joint Expeditionary Force* is a joint task force organized to undertake an overseas operation. In an amphibious operation it will include expeditionary troops, assault shipping and aircraft to transport and land the expeditionary troops, and Naval and Air forces to protect the various elements en route to the objective, to prepare the objective for assault, and to support the troops during and subsequent to the landing. *Expeditionary Troops* are made up of troops of all services—landing forces, garrison forces, and construction and service forces—assigned to a joint expeditionary force for operations ashore. Going further into detail, a *Landing Force* is a task organization of troops assigned to carry out landing operations against an objective area so located as to permit its seizure by troops operating under one tactical command. Some of its elements may be transported by air. The Landing Force, although normally a subdivision of the Expeditionary Troops, may for some operations be the largest troop formation or-

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★Admiral Davis is one of the foremost authorities on amphibious operations, having directed the wartime training effort in the San Diego area where all troops destined for the Pacific were readied for amphibious combat.—Ed.

ganized. The term Landing Force is usually applied to the troops organization assigned to an Attack Force. Lastly, an *Attack Force* is a task force consisting of assault shipping, an embarked landing force, and supporting naval units and tactical air units under naval control. It has the mission of establishing the Landing Force on shore and supporting its operations thereafter. An Attack Force may be the largest force organized, but normally is a major division of a Joint Expeditionary Force.

Specific Considerations

For our consideration we will concentrate on one Attack Force which is assumed to be a part of a Joint Expeditionary Force. The Landing Force of this Attack Force is a Corps. What are the prime considerations regarding the employment of the armored elements from the time the initial assault is made until control has passed ashore and the army elements have commenced normal operations?

The method of assault and the scheme of maneuver will of course be dependent to a great extent upon the characteristics of the landing area and hinterland. For our purpose let us assume that one infantry division will make the initial assault landing. The initial assault battalions will land according to a prearranged schedule. Just what has taken place in the objective area prior to the initial touchdown of these assault infantry elements?

Major Francis J. Roberts, Field Artillery, entered the United States Military Academy from the 26th Infantry Division, graduating in 1942. He has attended the Basic and Advanced Courses at the Artillery School, and the Command and General Staff College, and was the second officer ever to attain the mark of OUTSTANDING in the Naval Gunfire Support Course at Little Creek, Virginia. During the war he served in the ETO as S-3 of the 358th FA Battalion, 95th Infantry Division, and upon his return to the States became Assistant G-3 of III Corps.

Formerly the Intelligence Officer, Major Roberts is now Military Plans and Operations Officer on the staff of the Commander Amphibious Force, U. S. Atlantic Fleet, with station aboard the USS *Taconic*.

Prior to the arrival of the Attack Force, another component of the Joint Expeditionary Force called the *Advance Force* has been at the objective area. The Advance Force will contain the necessary elements to accomplish its mission of preparing the objective for assault. The Advance Force normally dissolves on D-Day and is redistributed to other parts of the Joint Expeditionary Force. On D-Day there will be an intense pre-H-Hour bombardment by naval gunfire and air to neutralize any targets. This naval gunfire and air support will continue throughout the post-H-hour and subsequent D-day phases and until artillery has been landed will be the main supporting elements available to the Landing Force.

The initial landing wave may be armored amphibians. Their mission is to provide close support to infantry assault units during the ship-to-shore movement and initial operations ashore.

The armored amphibian of most interest is the Landing Vehicle Track (Armored) Model 5—LVT(A)5. For armament it has a 75mm howitzer, a cal. .50 machine gun mounted forward, and two cal. .30 machine guns with pedestal mounts on the turret. The initial waves of infantrymen may be transported in another armored amphibian, the Landing Vehicle Track, Model 3—LVT(3). For armament it carries one .50 and two .30 cal. machine guns.

LVTA's may be employed as field artillery. Normally they precede the initial wave of troops. An interval between the first wave of armored amphibians and the initial wave of troop-carrying craft or vehicles is required in order that the armored amphibians be provided with effective landing protection. During the approach to the beach, LVT(A)'s will open fire.

The organic tank units of the assault infantry division will be handled in a normal manner. The tank battalion will remain intact for purposes of preservation of tactical unity, centralized control, and adherence to the principle of employing tanks in mass. The tank company of the infantry regiment will be handled or further assigned as the regimental commander desires, based on his proposed scheme of maneuver. The time of landing for tank elements will depend upon the situation ashore. Tanks may be landed at a predetermined time, upon order of the infantry commander, or on order of the division commander. In the latter two cases it is imperative that good communications exist between the beach and the control vessel. A line of departure is designated as a coordinating line off the beach and is normally marked by control vessels. Its main purpose is to assist the various waves in landing on their designated beaches at the proper time.

The Ship-to-Shore Movement is commanded by the Attack Force Commander through the control organization. This organization parallels that of the Attack Force. To assist and advise the control group and maintain liaison in the corresponding chain of command, troop commanders designate representatives who are embarked in vessels of the control group.

To operate the required naval radio circuits, a specially trained control communications team forms a part of each control party. The scope of Ship-to-Shore control covers the landing of assault troops, reserves, artillery, heavy equipment, ammunitions and supplies. It has nothing to do with control of naval gunfire or air support.

Once the initial elements of the assault infantry division are ashore the situation on the beachhead will influence the subsequent actions of the Landing Force Commander. If the enemy offers stubborn resistance and the establishment and expansion of the beachhead require hard, determined ground fighting by infantry troops, the Corps Commander will land his remaining infantry divisions prior to the landing of the armored division. However, if the resistance ashore is such that the beachhead expands rapidly and it is desired to exploit this favorable situation, the Corps Commander can land the armored division on his call. The units of the armored division will move to assembly areas immediately upon landing to accomplish removal of waterproofing, and a certain amount of redistribution, refueling, rearming and orientation.

During the planning and rehearsal phases of the operation consideration should be given to the possibility that the armored division may be landed at an early time, as implied in the preceding paragraph. During these phases, plans should be developed and training conducted so that if it is desired to have Naval Air furnish close support to the armored division as it moves out to exploit the breakthrough, this support can be rendered. This would entail details regarding Tactical Air Control Parties, communications, and other pertinent matters but will work excellently as Naval Air elements through their Tactical Air Control Squadrons have been trained to deliver rapid, efficient and accurate close air support.

Close air support is such a vital factor in armored operations that a general over-all description of how naval air delivers this close support would be desirable except that it is too lengthy for inclusion here. However, under the Joint Expeditionary Force Commander and aboard his flagship is stationed the Tactical Air Commander who commands all aircraft in the objective area.

In the event that armored elements are operating independently and at a sizable distance from other elements of the Corps, it is possible to insure close air support by more direct means. In this case, a combat air patrol can be assigned to work directly with the commander of the forward armored unit.

During the planning and rehearsal phase consideration should be given to the possibility that it may be possible and desirable in the event of a rapid expansion of the beachhead to have the armored division strike from or toward one of the flanks. Can naval gunfire support such a movement from the available sea area? If it can, plans should have been developed and training conducted which will permit the employment of this powerful supporting force. Just as for air support, the naval gunfire support would require prior planning and training for Shore Fire Control Parties, communications, fire support ships, etc. No discussion of the technicalities of naval gunfire support is made at this time as I believe the subject is interesting and timely enough to warrant separate consideration at a later date.

Now let us consider the case for and against the employment of the armored division as the initial assault division. In the selection of forces to accomplish the landing attack careful consideration must be given to organization for combat in order that full effectiveness may be developed to accomplish: first, delivery of maximum shock effect at the beachline; second, provision of depth for the attack to insure flexibility and sustained power; and, third, provision of maximum dispersion consistent with other requirements. Certainly with the armored division in assault it appears that these considerations can be met satisfactorily.

The expression "shock effect" is almost synonymous with armored force. An armored division delivers a terrific punch but just as water exerts resistance to a body passing through it, so the distance from the ship to shore takes a great deal of inherent drive out of the armored units. By which I mean, no running starts are possible and the troops start from where the boats ground on or off the beach. True the infantryman in an armored division is the same fighter as his brother in the infantry division. However, the infantry soldier of the armored division has been highly trained in the technique of fighting in coordination with large numbers of tanks. Why, if it is not necessary, should we use him on a hostile beach where this training will not be used to the maximum extent? Let him do his job at a more propitious time.

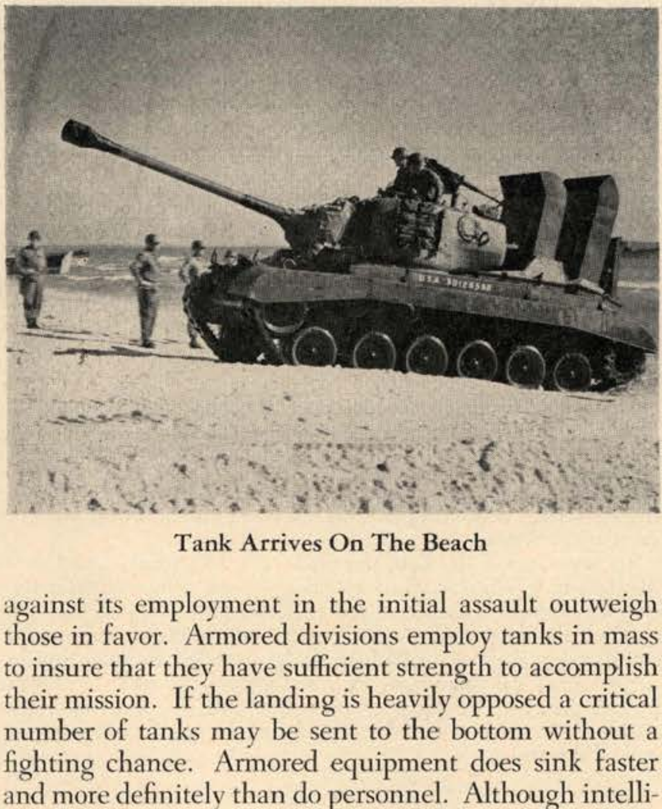
Self-propelled artillery is much more desirable for an amphibious operation than is towed artillery. It hits the beach and is ready to go. The time required before towed artillery is in and ready to render support does not compare favorably with the time required of self-propelled pieces. The immediate availability of the fire power of tanks and self-propelled artillery when they hit the beach is a most valuable feature. Certainly some quantities of each type are needed early in the assault to render assistance to the foot soldier.

The organization of the armored division is such that organic units can be grouped and organized to meet practically any combat situation. The qualifications of flexibility and power are inherent in the armored division organization. However, in any groupment there is going to be a mass of tanks when one considers the situation in the light of the size of the normal division beachhead. It starts from nothing. Of course, it will grow steadily but by the time one division is ashore under average conditions to be expected there is still not space enough to maneuver large numbers of armored equipment. Thus, as regards the organization of an attack in depth, one of the most advantageous characteristics of the armored division is curbed by the situation which must be expected initially.

Although the situation may not permit the employment of tanks in mass, there will certainly be plenty of work for small infantry-tank teams. Through the efforts of such teams the beachhead will expand and permit the employment and maneuver of large groups of infantry and tanks. Should the armored division be required to furnish the small infantry-tank teams during the initial fighting when they will be called upon later to carry on during the action with large groups of forces? They can do it but I think the most economical use of our fighting forces would indicate that the infantry division do the small infantry-tank fighting as their tanks are organic for just that purpose and the armored tanks be retained for use in mass.

In regard to the third consideration—maximum dispersion consistent with other requirements—we are concerned with critical losses during the approach and the ship-to-shore movement. In other words, don't put all the AA grade eggs in one basket. This of course applies to any type force being transported and any advantage toward less casualties rests with armored units due to their greater protection. A tank company deck loaded on an LST when strafed by enemy planes would suffer fewer losses than a quartermaster gas company so loaded.

In spite of the ability of the armored division to meet the above requirements, I believe the considerations against its employment in the initial assault outweigh those in favor. Armored divisions employ tanks in mass to insure that they have sufficient strength to accomplish their mission. If the landing is heavily opposed a critical number of tanks may be sent to the bottom without a fighting chance. Armored equipment does sink faster and more definitely than do personnel. Although intelligence agencies are capable of determining with great accuracy the hydrographic details of a landing beach, the sea possesses uncontrollable power and a storm can build up sand bars overnight that change a well-sloping beach to one with six feet of water between the grounding point of the landing craft or ship and the beach proper. Another minor point, but one typical of the many small points that favor the use of the infantryman with rifle hitting the beach first, is unloading on the beach. Many times after a long run through heavy seas the ramps of the LCVP's and LCM's will stick. The soldier goes over the side, but a piece of equipment sets there like a dead duck. True, these situations can be corrected, but they take time, a vital factor in the amphibious operation.


Tank Arrives On The Beach

Remember, to process armored equipment for shore use a shore party must be set up if it is to be done properly. And it takes time to get this organization functioning.

Another principle of tactical employment of armor is surprise. To gain surprise in amphibious warfare the Advance Force operations must be omitted. However, our experience in World War II has proven that in assaulting defended coast lines, if the Advance Force is given the necessary fire support ships and aircraft, and the time to accomplish the required destruction of the beachhead area, the casualty rates are a great deal lower than when these steps are not taken. Of course, diversionary and deception measures can be incorporated into the over-all plan. However, the element of surprise remaining is not sufficient to satisfy the tactical requirement of armor.

Armor normally employs "soft spot" tactics to advantage. If open flanks or points of weakness do not exist whereby armor can strike at vital objectives in the hostile rear, then such points should be created by other troops. This in general is the situation in an amphibious assault. Other troops, those of an infantry division, should make that initial assault, establish the beachhead, and create the point of weakness through which the armored division can strike. Once this beachhead is established, pontoon causeways can be set up to facilitate unloading of armor, assembly areas are available, supplies are pouring over the beach, and at the critical time the armored division can be called upon, unfettered and with no restrictions attached, to deliver the knockout punch for the invading Landing Force.

An amphibious operation conducted in this fashion utilizes to the best advantage the capabilities of the infantry division and the armored division. The organization for combat in the Corps provides for depth for the attack to insure flexibility and sustained power. As the situation develops ashore the Landing Force and the Attack Force commanders have at their call the fighting men, fire power, air power, supplies and equipment to establish and break out from the objective area beachhead.

CONCLUSIONS

I do not wish definitely to preclude the fact that there will undoubtedly be a time and situation when the terrain, hydrography, organization of the enemy, and the development of our equipment will permit and may call for the employment of an armored division in assault. I do believe, however, that at the present time conditions do not favor this use. Armored equipment is not getting smaller or lighter. The opposite is taking place and although I have purposely refrained from entering into the logistics aspect of the operation it is expedient to say that the naval task of transporting and landing armored units is becoming increasingly difficult. When one adds the logistics argument to the tactical considerations as discussed in this article the conclusion must be that at present an infantry division is best suited to make the initial assault with the armored division following and exploiting the infantry foothold.

NEWS NOTES

Army Doubles Number of Officer Candidate Courses

In order to help meet the demand for officers in the expanding Army, the number of Army Officer Candidate Courses will be doubled while the minimum age limit for attendance has been reduced, the Department of the Army announced.

Beginning in October, a new class will be started each month at the School located at Fort Riley, Kansas. In the past a new class was started every other month. Approximately 200 students constitute each class.

The change in the age requirement now makes it possible for individuals who have reached their nineteenth birthday to be enrolled in the course. Previously, the minimum age was twenty years and six months. The maximum limit remains 28 years of age.

Qualified civilians who are high school graduates may still enlist in the Army in the grade of Sergeant (formerly called Staff Sergeant) specifically for the purpose of attending the AOCC. Applicants who have not had basic training or its equivalent prior to enlistment will be sent to a training center for basic training before starting the course. Graduates will be given an opportunity to seek a Regular Army commission by serving on competitive tours of active duty as Reserve officers.

* * *

New Electronics Device May Change Army Communications Equipment

Possible revolutionary changes in Army communications equipment were foreseen by Major General S. B. Akin, Chief Signal Officer, following announcement by Bell Laboratories of the development of a tiny electronics device called a transistor.

General Akin ordered immediate tests of the transistor which, Bell Laboratories say, will do most of the things that a vacuum tube will do and some that vacuum tubes do not do.

The transistor is important to the Army because, having no filament, it requires no heating current to do its job of amplifying voltages. In portable communications equipment, such as the walkie-talkie and the handie-talkie, a large part of the weight and bulk consists of batteries used to heat tube filaments. The transistor could take a great load off the ground soldier's back.

Colonel Edwin R. Petzing, head of the Engineering and Technical Division of the Office of the Chief Signal Officer, declared that the transistor holds "promise of having great military value, and the Signal Corps has already made plans to investigate thoroughly its possibilities." The device was demonstrated to representatives of the Armed Services before public announcement of its development.

* * *

Safeguarding National Security

A sizable number of German individuals, firms, schools, and museums have made direct requests to American civic organizations and business firms during the past several months for printed matter that should not particularly concern them in their normal pursuits. A large percentage of these requests have come from the Russian zone, particularly the Leipzig sector.

Headquarters Fourth Army, Fort Sam Houston, Texas, reports that the Southwestern Bell Telephone Company has received several letters from the director of the Leipzig Museum requesting telephone directories of key Southwest cities for the years 1920, 1930, 1940, and 1947, ostensibly for the purpose of aiding in the preparation of a publication about the telephone system in the United States. The museum felt that the directories are "the best means to get an idea of the importance of telephone service . . . with special reference to the various commercial and industrial establishments, as well as agricultural holdings." An Austro-American Society in Vienna wanted the San Antonio Red Book (directory of business firms and advertisements), and a journalist living in Switzerland desired photographs that showed interesting scenes of the San Antonio area. He proposed to use them with a series of articles titled "Across the World."

A Leipzig manufacturer of electrical measuring instruments asked the Rockford, Illinois, Chamber of Commerce for a "map showing the highway roads and railway lines of your state and a report of your Chamber of Commerce." He was also interested in a list of periodicals of the electrical instrument trade and "specimen" copies.

* * *

Secretary Royall Announces Long-Range ORC Promotion Plan

Secretary of the Army Kenneth C. Royall announced a new long-range promotion plan for officers in the Organized Reserve Corps. This new policy prescribes the procedures and requirements for the promotion of Reserve officers while assigned in the Active Reserve. Officers while assigned in the Inactive Reserve or the Honorary Reserve are not eligible for promotion.

Assignment of Reserve officers to these three groups is based upon the individual's professional, physical and other qualifications. Age-in-grade, together with ability or willingness to participate in Reserve activities, are also determining factors in the assignment of officers to these three groups.

In addition to physical qualifications, an officer must fulfill the requirements provided by minimum and maximum age-in-grade limitations, minimum time-in-grade, and specific minimum training standards established for the various promotion grades. In general, the training standards are sufficiently flexible to make possible the participation of almost any active officer desiring to accomplish this phase of eligibility for promotion.

* * *

Army Tests Vehicle Greases In Deserts and In Alaska

A convoy of twelve 2½-ton Army trucks was scheduled to start from Aberdeen Proving Ground, Maryland, recently on "Operation Greaseball," a journey which will take them through the blistering heat of California deserts and the bitter cold of an Alaskan winter.

In announcing the trip, the Ordnance Department said that the data to be obtained are expected to have great value for the civilian motorist as well as tremendous military significance.

The test run, which will cover about 20,000 miles and continue until the spring of 1949, is intended to prove up, in rugged practical operation, new automotive greases developed by the Army's Ordnance Department and the petroleum industry. Six greases will be tested on the trip, each type in two of the trucks.

* * *

Army Speeds Up Processing Procedure For Reserve Officers

The Department of the Army announced that the processing of applications from Reserve Officers requesting extended active duty tours will be greatly speeded up because of the introduction of several short cuts in the former procedure.

A Reserve officer applying for extended active duty will now obtain a final type physical examination at any near-by military medical facility prior to submitting his application.

Formerly, physical examinations were accomplished after the applicant had been accepted for extended active duty. With the report of physical examination attached to the application form when it is forwarded for processing, the period between the time the papers are sent in and the officer is notified to report for duty will be considerably reduced.

All Army installations involved in conducting physical examinations will give the required final type examination to any individual who requests it for the purpose of applying for extended active duty. No written authorization is required. The completed report of the examination will be given to the individual concerned for attachment to his application form.

Another step in speeding up the processing of extended duty applications provides that orders for accepted applicants will be issued directly by the Department of the Army instead of through Army Commanders as has been the case up to this time. This new method will eliminate several additional time-consuming steps in the processing of applications.

Complete details as well as necessary forms may be obtained from Organized Reserve and National Guard Unit instructors.

* * *

Army Signs Research Contract With Johns Hopkins University

Major General A. C. McAuliffe, Deputy Director for Research and Development, Army General Staff, announced recently that a contract has been entered into with The Johns Hopkins University, Baltimore, Maryland, for the establishment of a General Research Office.

The scientists assigned to this office will solve important military problems in the fields of weapons development, strategy, tactics and logistics. Additional projects will be subcontracted to various other universities and research organizations. Most of the problems are highly classified because of the military security involved. Examples of some of the military problems to be solved are:

Analysis of optimum weapons, equipment and systems for AA defense. (Ground to Air)

Studies of relative value of short-range guided missiles, free rockets, and artillery.

Studies of comparative over-all costs of various methods of waging ground warfare.

* * *

Airborne Combat Team to Spearhead Joint Operation In Florida

An Airborne Battalion Combat Team from the famous 82d Airborne Division will spearhead Army troops participating in Operation Combine III, a special exercise conducted jointly by U. S. Army, Navy, Air Force, and Marine Corps units to demonstrate combined air-ground cooperation in assault, to be staged at Eglin Air Force Base, Valparaiso, Florida, from September 27 to November 3, 1948.

The operation will demonstrate problems of air-ground planning and execution to student officers in the advanced service schools of the armed forces as part of the Air Indoctrination Course.

The exercises will be directed by Major General William D. Old, commander of the Ninth Air Force. Participating Army units will be from the Third Army Area, commanded by Lieutenant General Alvan C. Gillem, Jr., and Naval and Marine participation will be coordinated by Admiral W. H. P. Blandy, commander in chief of the Atlantic Fleet. Air Force units will be drawn from the Tactical Air Command's Ninth and Twelfth Air Forces and the Strategic Air Command. The Air Proving Ground at Eglin Field, Florida, will furnish logistical support.

Army units from Fort Bragg and Fort Benning to take part in Combine III include: One Airborne Infantry Battalion, one Airborne Field Artillery Battery, 75mm Howitzers, Airborne Medical and Signal Detachments, one Field Artillery Battery, and one heavy tank company. These units plus service troops —Ordnance, Postal, Military Police, Transportation, and mess personnel—will be stationed at Eglin Air Force Base during the exercises under direction of Major General Clovis C. Byers, commanding general of the 82d Airborne Division.

* * *

Books and Courses

OCAFF has issued a letter directive to its schools which will have the effect of increasing the availability of packets of instructional material through Book Department sale. In the future, all instructional material published by the schools (with necessary exceptions: graded examinations, classified material, etc.) will be placed on sale and listed in Book Department catalogs. Once the program is in operation, it is believed that individuals and particularly civilian component instructors will find it most helpful. Gratuitous issue of catalogs, when available, will be made by Army commanders, and upon direct request to either Army commanders or Book Departments. It has been suggested to chiefs of the technical and administrative services that their schools also conform to the above policy.

The Armored School has already announced the inauguration of its program, and availability of catalogs. In addition, TAS is commencing a program of automatic distribution of Book Department material to certain units and headquarters of the civilian components.

* * *

Field Forces Briefs

The Advisory Commission on Service Pay held a round-table discussion in Washington with representatives of the personnel offices of the three military departments, the Coast Guard and the Public Health Service, concerning policies and proposals the commission is considering for recommendation to Secretary Forrestal.

The commission has completed the groundwork for its report—studies of previous pay surveys and recommendations made within the military establishment, existing and proposed legislation affecting pay, industrial wage comparisons, special pay and allowances, retirement and allied benefits, etc.—and is now discussing its conclusions. It plans to report to Secretary Forrestal to permit thorough study of its recommendations and the drafting of proposed legislation before the 81st Congress meets in January.

* * *

OCAFF and the Chief, NGB, have agreed upon an over-all training program for the NG which substitutes a three-year program for the previously employed 4-year plan. The plan provides for the teaching of basic and individual military subjects in the first hour of each armory drill period, and the progressive teaching of branch and unit subjects in the second hour. Thirty National Guard officers are now on temporary duty with OCAFF, developing the detailed schedules to implement the new plan.

* * *

The Department of the Army has approved OCAFF's recommendations for revision of the ROTC curriculum to reduce the time allotted to cultural subjects and materially increase the hours devoted to branch tactics and technique. It will also provide for branch instruction commencing with the freshman year, a departure from the present system, in which freshman and sophomore ROTC instruction is branch immaterial, and specialization by branch is confined to the junior and senior years.

A representative PMS&T or assistant from each branch maintaining ROTC units will be ordered to temporary duty at OCAFF to write the scopes of the general subjects and the branch tactics and techniques for the revised curriculum. The new program will be placed into effect in the fall of 1949, and it is hoped that printing and distribution can be accomplished by January, 1949, in order that PMS&Ts may have ample time for planning.

* * *

The Chief, AFF, has recommended to the CGs of the six armies *that short courses of a minimum of 40 hours be conducted by army commanders for those officers and noncommissioned officers who are to assume Troop Information and Education duties in training divisions, units and organizations activated in the implementation of the expansion of the Army plan.*

* * *

Training Briefs: AFF has expressed to the CGs of the six ZI armies the desire that *policies, methods and activities of the Universal Military Training Experimental Unit be extended to all units* insofar as local training and administrative situations permit. Emphasis was laid on the morale activities, chaplains' program and after-duty activities; employment of trainee courts and the merit-demerit system were made optional, with their value in most types of units to be determined locally.

Must the Blind Lead the Blind?

Small Unit Training and Free CPXs are the Keys to Real Leadership

by Colonel Wesley W. Yale

I

Our Great Training Deficiency

MOBILITY, Fire Power and Shock Action are well-known characteristics of Armor. But there is yet another characteristic which might be called "Commandability" and which is a heritage of the great mobile leaders of history, such as Genghis Khan, Murat, Forrest and Patton. These men, and many others less notable had the ability to command and control mobile forces so that by striking quickly at maximum strength they were often able to defeat superior enemy forces in detail. In fact, it was the command technique of men of this type that brought out the characteristics now ascribed to Armor. However, history is curiously reticent in detailing the manner in which they exercised command. We have a record of the qualities through which they inspired others to victory, but little else.

It seems probable, then, if we could study and tabulate the mechanics of their command systems, instead of dwelling on their personalities, that we might increase materially our chances of producing a corps of young leaders better able to follow faithfully in their footsteps.

Unfortunately, our training system is glaringly deficient in teaching the technique of command and control. We seem unable to insure that all echelons receive a practical working knowledge of the means necessary to execute tactical maneuvers and to coordinate physically the different elements involved in a tactical plan.

Colonel W. W. Yale has spent almost all of his service since 1922 with troops. He was on staff duty for some six years in the First Cavalry Division, and was its G-3 at the outbreak of the war. He instituted the courses in practical small-unit attack training at the Cavalry School under which most of the wartime classes were trained. He served with the 8th and 11th Armored Divisions prior to going overseas, and commanded CCB of the 11th Armored from the Bulge to the end of hostilities in Linz, Austria. He has now taken over the Editorship of the Journal.

It has been said that there is no substitute for experience. Yet our prewar schools seemed determined to confront green lieutenants with the problems of a mythical Colonel A and his regiment; if a student progressed to the Command and General Staff School he immediately assumed the burdens of Major General A, a division or even a Corps commander. During all this time it was most unlikely that he had ever so much as seen a full battalion in the flesh.

The system simply made the best of a situation in which, due to our skeleton peacetime army, the opportunities for actual command were extremely limited. Not only in the schools, but through the medium of correspondence courses, the Regular, the Reserve and the Guard officer received instead a thorough education in staff planning and in the preparation of field orders.

It should be emphasized that this was splendid training. Without it the vast plans for our terrifically complex overseas undertakings would have been impossible. In many a mind, however, the five-paragraph order became the end in view. Its completion often found the command and staff feeling that their task was done—that the all-important execution of the order would somehow come out all right.

But what about practical experience in command? Division after division was whipped into shape during the early war years, with high class instructional methods applied to conditioning, the use of weapons and marching. Yet only a few days at best were spent in small unit tactical training and even less at the vitally important company and battalion level. And it must be admitted that in this respect the great maneuvers in Louisiana, Carolina and elsewhere, valuable as they were, were little more than exercises in marching and camping.

Is it idle, then, to speculate upon the degree to which our rather high rate of casualties overseas might have been lessened had we been able to devote as much training time to the technique of battlefield command as we did to staff planning? It seems apparent that the same seeds of error are even now ready for planting once more, and under the same growth factors, i.e., a relatively small army, limited time, and a sudden influx of great numbers of young soldiers all requiring extensive individual training. It will be all too easy to create the old situation of the blind leading the blind.

Fortunately, contrary to the conditions of the past, we have access to the knowledge and skill of commanders of demonstrated ability in mobile warfare—

> *"Dearly beloved, be* doers *of the word and not* hearers *only, deceiving yourselves. For if anyone is a* hearer *of the word and not a* doer, *he is like a man looking at his natural face in a mirror; for he looks at himself and goes away and presently he forgets what kind of a man he is."*
>
> ***Epistle-St. James 1.***

experts in Blitz. The Armored Forces, where the use of combined arms was most frequent in almost all echelons, have more than their share of capable leaders. Among the most prominent of these, for example, is Brigadier General Bruce C. Clarke, former leader of Combat Commands in the 4th and 7th Armored Divisions and now opportunely Assistant Commandant at The Armored School. There are many others of proved worth in small units. All give reassuring proof that we have the human resources as well as the material which can guarantee adequate training in command.

We must here understand, however, exactly what is meant by the "technique of command," and understand the factors which must be considered in order to make the training effective without disrupting other phases of instruction. With this in mind the correction of the present deficiency is simple.

All that is needed is, first to provide a more realistic approach to small unit tactical exercises and to give much more training time and emphasis to them; secondly, to adapt the so-called Command Post Exercise to the actualities of open warfare.

II

Leadership and Command

A recent article on the technique of command concerned itself almost solely with a discussion of human relationships—a list of the do's and don'ts of a commander who aspires to create an atmosphere of cheerful obedience to orders. In other words, it was a discussion of the technique of leadership, rather than that of command. But while leadership is admittedly of tremendous importance it is not what we are talking about here. By "technique of command" we mean the process by which a platoon leader, be he an inspirational leader or only one by act of Congress, actually employs his personality, his voice, his hand signals and his runners to control his squads in moving from one tactical objective to another, utilizing maximum fire support and minimizing losses; or, carried further, the phrase denotes the system by which a division commander maneuvers the elements under his charge; how he coordinates tanks, artillery, infantry and aircraft; most of all, how he retains control of an operation so that proper timing will not be lost through failure of some element to maintain schedule.

Unfortunately, in its strictest sense, practice in the art of command and control requires a body of troops to practice upon. It cannot ordinarily be provided by a school except by demonstration of small units. With our tight training schedules of the present day, and particularly above the company level, to require troops to move about subject to the errors of an experimenting commander and his staff, manifested by delays and changes of orders, is to invite trouble. Not only do we waste the time of the individual soldier and officer which is badly needed for individual training but we lower his morale and decrease his respect for his commander.

In the years before the war most commanders were aware of this risk and simply ignored the whole thing. Many readers will recall the old-time regimental commander who had his S-3 draw up an annual regimental tactical exercise with the Regimental Executive Officer in command. The colonel escaped by appointing himself as Chief Umpire of the ensuing chaos. Chaos was expected, condoned, and could be forgotten in a round of drinks at the Club. Luckily, most of the errors were comic, and to the regular soldier of yesteryear time meant very little.

III

Past Efforts

The need for command training is not just being discovered in these pages. For many years we have had "Command Post Exercises," designed to afford practice for command and staff personnel of higher units in the preparation and dissemination of plans and orders, without requiring the presence of the troops themselves.

Again, most officers are familiar with the words "Battle Drill" even if they have never experienced one. Certainly they have been urged upon us. Battle drills are generally considered to be simply extensions of extended order drill—exercises in which subordinate elements of a command are practiced in moving to appropriate portions of a common terrain objective, with each adopting formations suited to the ground and to assumed conditions of enemy fire. Battle Drills are without doubt our most valuable medium in teaching command technique in small units, yet our training schedules have largely ignored them.

In training our armored divisions a form of battle drill known as the "Golf Course" was devised for tank platoons. Bits of terrain were selected at various points in the available training area, each having characteristics suited to bring out some tactical lesson. The "holes" were coached and supervised by instructors to the end that, a platoon having played the course, its leader had had experience in handling his platoon under a variety of tactical situations.

If there can be any fault found with battle drills and the golf courses it is simply that of failing to emphasize them sufficiently in the training program. The handling of command post exercises, however, deserves considerable criticism.

Command Post Exercises have in the past been designed to fit an imaginary tactical situation. The commanders and the staffs were expected to set up their elaborate command posts, estimate the situation, make decisions, prepare and distribute orders and test communications.

Most of these exercises were valuable in their way but they invariably failed to make the most of the opportunity. Attempts to create a "moving situation" were usually unsuccessful despite artful dodges such as the opening of sealed envelopes at stated intervals containing the new situation at the time indicated. No practice in combined arms, particularly with reference to the tank-artillery-air team was obtained. Worst of all, the static nature of the exercises tended to immobilize commanders and their staffs by reducing them to the status of glorified clerks. The command posts were made the center of interest even after the realization that mobile warfare required the organization of headquarters into echelons, so that the commander could move at will to where he could best observe and influence the action. The command post exercise rarely provided any action to influence.

IV

Basic Faults of Estimates and Orders

Before suggesting measures to provide adequate training in Command Technique, let us consider two factors which have a considerable bearing on the problem and at the same time on the entire Army educational system. These are: (1) the Estimate of the Situation and (2) the "Five-Paragraph Order."

Both the Estimate of the Situation and the Five-Paragraph Order are derivatives of an ordinary college course in Logic. They teach the student to think logically in the military sense. In the classroom they form the cornerstone of our educational system. In the classroom, also, every effort is made to adapt them to the battlefield, for no instructor is so dense as to forget that the battlefield is the end in view.

But in spite of all we can do these great cornerstones do not pull their weight with respect to leaders of Combat Command and lower rank. The reason is simple: paragraph one, in the face of reality, cannot be written or spoken.

Paragraph one in either a field order or a rapid mental estimate of the situation is concerned with the enemy. But what can be said about the enemy in these days of flashless and smokeless powder, or of generals like the late George S. Patton who rightly have small patience with a commander who controls almost unlimited fire power yet insists on conducting extensive reconnaissance before committing his troops? The modern battlefield is characterized by fluidity and, to the observer at the outset of an action, by a deceptive air of being completely deserted. But with or without enemy information, the leader who desires to retain his command attacks anyway. It does not take long to learn that information of a tactical nature given out by G-2 is nearly always incorrect or too general to be of value.

Of course the schools have long recognized that often no information of the enemy exists on which to base a decision or a plan, and that on these occasions recourse must be had to attacking terrain. But they have emphasized the orders based on enemy dispositions and have given only casual reference to methods of developing a train of thought in tactical leaders which will correspond with the facts of life—the attack of terrain.

We have a genuine need for two systems of teaching Estimates and Field Order preparation; while basically alike one system should point to staff planning and the movements of Corps, Armies, amphibious task forces and similar commands; the other, highlighted by differentiation from the first, should emphasize movement against terrain objectives alone, and should be aimed at the commander in the field.

It is admitted that our system has striven to differentiate but it has failed. The officer in the field has been conditioned to think against an enemy, not against terrain.

V

A New Approach to Small Unit Training

The foregoing discussion is of course academic. It is inserted here because of the new vistas which are opened to us if we drop "the enemy" from consideration in the frequent small unit tactical exercises which should be included in a modern training program.

Junior leaders should be prepared for a training program of foe-less exercises by giving them a thorough and practical course in Appreciation of the Terrain. They should be taught the simple rules by which key terrain features and the most suitable routes thereto are recognized and selected. If this course is coupled with the usual classes in Rapid Estimates of the Situation and the Use of Field Orders, with both geared to the idea of attacking terrain instead of the enemy, each leader is ready to begin field exercises without wasting the time of the men in his command.

A training program organized along these lines parallels strikingly the training of a football team to a degree never before attained. War and football have often been compared for similar characteristics. But it is inconceivable that a football team would ever take the field without having painstakingly learned a repertoire of plays, each identified by called signals; and without having exhaustively practiced these plays in what is familiarly known as "signal practice."

On the other hand infantry and armored units have all too often entered combat without ever having had the counterpart of signal practice. Without, in fact, ever having understood the repertoire of tactical plays which were listed for them in the common training regulations.

Signal practice for the military quarterback means nothing more than Battle Drills. He gets his repertoire of plays from the appropriate manuals indicating the formations applicable to his unit for different conditions of terrain and enemy fire. His signals are also listed in the manual—voice and hand signals. Radio, runners and liaison personnel amplify the voice and hand in calling the plays. Each exercise or play is set up by giving the leader a terrain objective, a plot of ground leading to it and the assumed conditions of hostile fire which prevail. The leader executes the play by assigning intermediate and final objectives to his subordinate elements, signaling the formation and routes to be taken and by coordinating and controlling the movement of all elements to the final objective.

Signal Corps

Studies in appreciation of terrain—like this . . .

Elementary drills are held until the commander and his men are familiar with formations, signals and the control devices, such as radio or runners, which are assigned to the organization.

Once familiar with elementary plays the unit adds to its repertoire by directing one part of the command to support by fire the maneuver of the other to an intermediate or the final objective. The repertoire is completed by varying the familiar plays so that leaders are required to call for mortar, machine gun, artillery or air support against points in their zone of action which might conceal hostile gunners.

The end is reached in a surprisingly short time and results in a tactical *team* able to size up a piece of terrain, select a play or maneuver to fit it, call on outside fire support and then execute the play with assurance and skill.

VI

Shades of the Reds and the Blues

There will be critics of this type of training who will repeat words often heard in the months of preparation for World War II. They will say that the soldier, for morale purposes, must know what is going on and in particular must have the tactical situation explained to him.

Must we then return to the rather ludicrous maneuvers of that era with their attendant and elaborate system of colored flags to outline enemy positions by type? Or the conditions where the Reds, as a concession to the Blues, slithered through the undergrowth in a posture that became known as the "maneuver crouch"? Was this good preparation for the actual battlefields of the world which, as we have already pointed out, were chiefly characterized by a complete absence of life?

The soldier knows nothing of the situation in war except in a general way and is lucky indeed if he has been trained to the degree where he knows his objective. Why kid him along in training?

Two-sided maneuvers are to tactical training what scrimmage is to football and should be held only when signal practice has been mastered. We have ample time set aside for maneuvers. When they are held the soldier is free to find out all he can about the enemy—and his officers should tell all they know. It will be more than they know in combat.

VII

Small Unit Training Suggestions

We have spoken of the lack of leadership training as it applies to the technique of command. We have pointed out that by emphasizing small unit battle drills in our training programs we shall perfect junior commanders in the *real* essentials of leadership. And as will be discussed in detail below, we have suggested that senior commands may be given effective command training through a new approach to the time-honored Command Post Exercises. But before passing to that subject, let us summarize the salient features of the foregoing into broad suggestions for future training:

a. Approach the entire problem of training in Command Technique at Officers' Schools by providing a course to teach methods of instruction in: (1) Appreciation of Terrain; (2) Simple Field Orders for the attack of terrain; (3) Battle Drills.

b. Require all training programs to include classes in the above in unit schools at the outset of the program, to continue until command proficiency on the drill and maneuver field has been demonstrated.

c. Organize the unit training area according to the "golf course" idea, evolving a number of tactical battle drills and designating as many tactical subareas (holes) as may be appropriate for each, at both the platoon and company level. "Holes" should be independent of the assignment of unit training areas at large camps, being treated in the same manner as firing ranges.

d. Initiate simple infantry platoon battle drills during the first ten days of the training program and initiate tank platoon and similar mounted unit battle drills as soon as reasonable driving proficiency is attained (this will be dependent upon availability and condition of equipment).

e. At the end of the third week of training require that 50% of the training time ordinarily assigned to platoon field training be devoted to battle drills as first priority, holding concurrent individual training where applicable.

f. At the end of the 4th week of training require that one day weekly be devoted exclusively to battle drills at the company level with applicable concurrent individual training, and with tanks, infantry and support weapons operating jointly as training progresses.

It is evident that the foregoing places primary importance on small unit field training and requires concurrent training in many subjects now dignified by classroom and platform. For example, the Articles of War can be read satisfactorily from the deck of a tank. There are few phases of individual training that cannot be similarly handled, with a saving of time in the hours and minutes spent in going to and from assembly halls, or to and from drill areas. The point is that there is nothing more important than small unit training. If it does nothing else, it shows the individual soldier and noncom what he is aiming at—*why* it is important that he be individually proficient, since it is obvious that he hurts the team when he is not. Thus, small unit training not only develops teamwork but provides incentive for individual training.

VIII

Higher Unit Training; The Command Post Exercise

Before passing to suggestions for improving the conduct of command post exercises and the training of higher commanders and staffs, let us review the objections to the type of command post exercises held in the past. Primarily, they failed because they were founded on an "enemy situation" which once initiated by a series of assumptions could not be enlivened without the presence of an actual hostile force. Thus the action was invariably stilted and slow. Great emphasis was laid on elaborate command posts, where G-2 and G-3 situation maps competed with circus posters in chromo-like color and detail. Commanders sat in the CPs not only to look at the maps but to be sure of being present when the Chief Umpire or Senior Commander inspected. And this was usually an inspection in its truest sense—not an attempt to further the tactical situation by a command decision. The need for commanders actually influencing the action of their principal tactical element and yet being in radio contact with their CP was not given sufficient importance.

In a word, they were exercises in marching and camping for headquarters and headquarters companies. Withal, they provided excellent communications practice for Signal Corps and allied personnel, even if they missed their purpose with respect to commanders.

IX

Participation and Preliminary Training

The purpose of command post exercises remains that of giving commanders and their staffs practice in controlling subordinate elements of their commands, without requiring the presence of the troops to execute the orders.

That purpose is still valid. But it does not necessarily mean that only personnel concerned with control should be present at the exercise. If any unit can conceivably benefit, and the training program warrants, then that unit should be included. But there can be no benefit in the early stages of training when higher headquarters are inexperienced and awkward. Nor can the greater part of the troop strength of a command participate, for then we cease to have a "command post" exercise. It is then by definition in Training Regulations, a Field Exercise or "one-sided maneuver."

All headquarters should prepare for command post exercises which come later in the training program by holding "command post drills." In the training period of World War II this was habitually well done. Headquarters personnel practiced road marching, camping, setting up staff sections, defense of the bivouac, etc. Until proficiency is reached in such fundamentals, attempts to carry out a command post exercise would certainly waste the time of the other unit headquarters involved.

The next step is the command post communications exercise, with a minimum of control personnel present. In the past, an exercise of this type was the end in view and its faults have already been discussed. But if commanders and staffs are to get truly beneficial training for combat, there are still progressive steps to be taken.

Where proficiency is gained by command post drills and perhaps some communications exercises, a further step may be taken by building a command post exercise around a field exercise held by a subordinate unit. For example, when a battalion has scheduled a battle drill or field exercise, the regimental headquarters will profit through a command post exercise tied into the same terrain and tactical situation, with troops other than those of the battalion assumed, except for command and staff.

At this stage also, it will be profitable to include fire support headquarters, such as the control elements of mortar platoons or artillery battalions, together with devices for marking their fires. Fire marking systems are already well known and have always been well executed.

X

Control Groups

The best insurance for the success of command post exercises is the presence of the minimum number of control personnel with each subordinate unit. The greater number of lower echelon headquarters that are included, the better, though in large commands a decision must be made as to how far down the scale the exercise can go without disrupting other phases of the training program. Again the question: "who will really benefit?"—rather than, "who will be left out?"

It is obvious that no regimental command post exercise, for example, will run smoothly if the battalion headquarters are inexperienced or poorly trained. Yet it is not usual to hold command post exercises at the battalion or company level, and it is this fact that has been one of the major factors in spoiling past performances.

It is perfectly possible and desirable to have company and platoon command post exercises. For one thing, if they become static, the absurdity of the situation is at once recognized. They are excellent preparatory exercises for battle drills which are due to be run over the same ground. And they prepare what we shall call the "minimum control group" for later participation in mobile command post exercises held by higher units.

A Minimum Control Group may be defined as the least number of personnel required to operate a unit tactically. There is no need to specify, since it is a proper matter for the commander concerned to decide who can be spared or who will not benefit materially by being present. We so define it here in order to simplify later explanations of command post exercises for larger units.

Signal Corps

...translate naturally into Battle Drills—like this...

An infantry rifle platoon Minimum Control Group would probably be the actual platoon headquarters, consisting of the leader, the platoon sergeant and the assistant, and the two messengers. A platoon command post exercise would ordinarily consist of a "dry run" for a forthcoming battle drill in which each squad was represented by the squad leader, who would follow the route directed for his squad in the battle drill, but who would be affording command technique practice to the platoon control group by actually moving over the route under platoon control. Exercises of this kind would be ideally staged during the time devoted to Officers' and NCO schools.

Tank and other mounted units carry out CP exercises similarly, with the obvious modifications. The minimum control groups of lower mechanized units are small enough to be accommodated in a single radio equipped vehicle, only a driver, the commander and radio tenders or operators being necessary. Going to higher units, staff vehicles and personnel and crews needed to man the normal radio nets are also required.

An MCG (Minimum Control Group) for an infantry regiment might be composed of its headquarters and headquarters company, less the Personnel and Administration and Supply elements; though again let us repeat that there is no hard and fast rule except that of having the commander designate the attendance, based on the benefit to be obtained. Often it will be practicable to inject a supply situation into a company or battalion command post exercise, where supply personnel are expected actually to transport the ammunition or other supplies to the required locations.

XI

Mobility

Now we come to the question of how the modern command post exercise can be made mobile and kept mobile.

The essential features are that there shall be no outlined enemy position or situation and that the artificial "controls" injected into the situation be minimized. Artificial controls can be kept down to a statement of the type of enemy fire that might be expected in various portions of the zone of advance, and to the representation of friendly support fires by means of fire markers. No representation of hostile fire is necessary.

In beginning a command post exercise, the Minimum Control Groups may march to the area of the exercise, or they may be deployed in position, as for the start of an advance after contact with the enemy. In either case they take position in column or in the deployed formation with intervals and distances that would be expected if troops were actually present.

The commander of the headquarters conducting the exercise issues a normal type field order for the attack against terrain. But for the sake of minimizing artificiality the following should be given special emphasis:

(1) The conditions of hostile fire assumed to be present.

(2) The terrain objective.

(3) Zones of action and boundaries of subordinate units.

Although the necessary artificialities and "ground rules" would properly be the subject of officer and NCO school instruction, the commander may wish to review them just before the exercise. They are the same for all echelons and may be stated as follows:

1-*a*. The MCG for the *lowest* echelon present is habitually organized so that only the commander and the personnel required to pass information and reports *back* to higher headquarters are present. No personnel ordinarily needed to control lower units are required.

b. The MCG of the lowest echelon present has the duty of advancing in the zone of action prescribed for it in the field order until the final objective is reached, remaining however, always under the control of its proper commander in the next higher echelon of command.

c. En route it must pass back frequent reports concocted entirely from the imagination of the control group leader. For his part, he will visualize the action to be at times successful and at times otherwise; he reports the type of enemy fire encountered, following the broad outline given by the senior commander at the outset of the exercise; he requests fire support in accordance with the demands of the situation as he imagines it; he asks for medical assistance, extra ammunition—in short, he reports on almost anything and everything which could reasonably be expected to be experienced in combat.

2. The MCGs of higher echelons will exercise normal control over the development of the action in accordance with the reports made by the next lower echelon and following the mission laid down in the field order.

3. MCGs representing fire support units, plus their fire markers will provide support as requested and directed by units they are supporting or to which they are attached, following the normal chain of command.

* * *

Signal Corps

. . . and ultimately make this "doin' what comes natcherly."

The exercise begins at a command or signal and is limited in its action only by the imaginations of the lowest-echelon unit commanders concerned. Admittedly, many people may lack imagination to the degree desired, or may lack training to give out logical reports. However, imagination can easily be supplied by giving the individual a quota of messages denoting favorable or unfavorable action, requests for support, and the like. The same may be done for the poorly trained individual, who immediately experiences the very best and most practical training in field command that could be given.

Other commanders may be over-imaginative. To the officer experienced in combat, it would be difficult to receive a report more fantastic than many of those which actual combat can produce. However, the normal chain of command is there, available to give impetus to slow-moving elements by ordering a rapid advance under cover of a heavy supporting artillery concentration; or it may slow down troops which are moving too fast on the pretext of coordinating them with adjacent troops. Any plausible reason suffices.

One thing should be demanded. When units request support fire and it is given to them, properly marked by the fire markers, the control from above should be adequate enough to insure that the supported unit *moves* under the protection of the fire, either to the objective or for an appropriate lesser distance. This provides an ideal means of habituating commanders in the avoidance of a common and costly error of combat—the failure to take advantage of support fires.

XII

SUMMARY

So much for the mechanical means by which mobility may be introduced into and maintained in a command post exercise. Skill in the execution of CPXs will not be gained in a moment. Like any other type of military activity successful CPXs will result only from adequate preparation—from unit schools and from the progressive and rapid supervision of small unit CPXs and Battle Drills. But the system proposed here is definitely not complicated, nor can the progress of an exercise stop in complete confusion as so often happened in CPXs of the past, where each move was "pre-set" and where one misstep lost all continuity and cohesion.

In this system the higher headquarters is not dictating a situation which it then solves itself. On the contrary, the factors upon which it must act develop as a surprise to all ranks. The commander and staff face a real test of their ability to control the progress of the action. And this, of course, is the real purpose of the command post exercise

Moreover, the mobile CPX is readily adaptable to changes in the training program of large units, where for some reason the platoon or company echelons cannot attend. A regimental CPX is workable with only battalion commanders present, assisted by communications personnel to pass back reports to regimental headquarters, and sufficient clerical help to compile data on a mythical moving situation which may well prove a tax on the imagination of the battalion commander. In this example the battalion becomes the "lowest echelon MCG" with duties as listed in previous paragraphs. Fire support MCGs supplement the battalions, but due to the probable inability of battalion headquarters to observe the fire markers, the effect of the presence of the fire support MCGs is largely lost—at least in comparison with results when the company and platoon echelons are present.

XIII

PROGRESSIVE CPX TRAINING

To recapitulate, proper progression in training for

CPX exercises may be tabulated as follows:

1st Step: *Command Post Drills* for company and battalion echelons and above to perfect technique in marching, camping, defense of bivouac and the like, as well as practice in the clerical aspects of operating staff sections, where applicable, and particularly operating with the normal divisions of Commander's Group, CP Group, etc.

2d Step: A tie-in with small unit Battle Drill training which in turn has developed from schools in Appreciation of Terrain and Combat Orders for the Attack of Terrain. The *small unit CPX* follows naturally in the program and has as its first objective the training of platoon and company headquarters to function in the field in preparation for Battle Drills scheduled over the same ground; secondly the small unit CPXs provide the opportunity of teaching platoon and company headquarters to provide the imaginative-type battle reports to be required in later higher unit CPXs.

3d Step: *Communications exercises* for battalion and higher headquarters for the primary purpose of testing radio, wire and other means of communication between various command posts and incidentally for practicing commanders in the use of voice nets.

4th Step: *Mobile Command Post Exercises* held as already outlined and with as many echelons present as possible.

XIV

LONG-RANGE PLANNING

The importance of training in command technique suggests that the entire training program of a division, let us say, be planned progressively so as to utilize to best advantage the training ground available. A survey of the area will indicate the best terrain on which to hold at least one division field exercise in attack of terrain. Field orders and maps, delineating the zones of action and boundaries for the advance should be prepared at the beginning of the training program.

Not all areas may be suitable tactical ground. If not, zones suitable for one or more combat teams, or combat commands as the case may be, should be designated.

The training mission will then be one of conducting, at the earliest possible moment consistent with adequate preparation, a division field exercise with all troops present; or, where adequate terrain is not available, with troops operating in the zones suitable for tactical training and with Minimum Control Groups carrying on a CPX in the other zones. An exercise of this nature can be repeated many times with profit, rotating units in the zones of action; successive similar exercises will always present sufficiently different aspects to make the action interesting for Division Headquarters.

The nature of the exercise and the field order governing the attack should be made known to the entire division via the unit schools. Thereupon by the usual rotation of training areas in day-by-day training, the entire division could be readied for the exercise by tying in small unit battle drills and CPXs and larger unit tactical exercises and CPXs with the requirements of the "big picture."

Perhaps only one division exercise could be held during the entire training period. But if it developed from adequate small unit training, CP drills and mobile CPXs it would prove a pleasurable and a unique experience in the great possibilities open to a hard driving battle team.

XV

CONCLUSION

Our prewar schools were so well organized and the subject matter so well presented that both instructors and students sometimes became overwhelmed with their own learning. When some of our finest officers were given commands and sought to correct errors in leadership, their first thought was, "let's have a school."

It is not the answer, because you cannot teach command technique in a school. You can outline its principles, just as a football coach can give a chalk talk. But to get the subject across you must get out on the playing field and execute—execute—execute.

We have just finished a war which was won gloriously by the finest army in our history. It is difficult to criticize its actions. Nevertheless, the more battle seasoned units sustained casualties which all told amounted to well over 100% of strength, counting replacements. Probably these were necessary in view of the turnover in junior leaders. But in the end the battle seasoned veteran lived up to Col. S. L. A. Marshall's definition: "they were battle seasoned when they knew it was dangerous to leave a foxhole, and as soon as they felt that, by the law of averages, today was their day to get it."

Scattered among the countless actions were cases where everything went well—where the infantry-cavalry-tank-artillery-air-engineer team functioned smoothly and with perfect timing. These occasions were invariably marked by easy victories, heavy enemy casualties, and little or no loss on our side. For the future, this should be normal.

This article has tried to suggest that by emphasizing small unit training in attack against terrain objectives and by re-styling Command Post exercises on less stilted lines we can create a confident leadership in all ranks. It will be based on the real essentials of leadership, which can be taught, unlike the other attributes of leadership, such as common sense, which cannot be. By this means we cannot fail to produce well integrated combat teams that will become battle seasoned through killing the enemy instead of through watching their comrades become casualties. In combat, actions featured by forceful and coordinated fire and movement will become commonplace.

There will be far fewer DSCs awarded. But there will be no blind to lead and no blind to be led.

"Language is a weapon of war, but it is an even more potent tool for peace!"
HERE IS AN APPRAISAL BY AN AUTHORITY ON THE ART OF HUMAN INTERCOURSE

LIGHT OVER BABEL[*]

by Max Sherover

I

THE confusion of Babel exists! We live in a dark labyrinth divided into 2,756 language compartments subdivided into thousands of dialects. Let us try to turn on the light of understanding.

Language is *the* essential of human life. It is the "time-capsule" into which is compressed man's entire history—all his knowledge, his hopes and fears, his tragedies and joys, his failures and aspirations, his depravities and nobilities.

This attribute raises man above all other living creatures, enabling him to communicate his wants and thoughts through an organized, conventional medium which conveys his meaning to others within the same linguistic group. Without language, he would be on a level with the beasts who give vent to reactions by grunts, yelps, and other primitive sounds. Only man—through language—has a "time-binding" device by which he transmits the sum of his experiences, observations, and thinking to those who come after him.

But, unfortunately, this priceless gift of speech loses its greatest effectiveness because there is not one world-tongue. Mankind is pathetically separated by *thousands* of languages and dialects, each a veritable barrier to intergroup and international understanding. The New Testament thus far had to be translated into 2,756 languages to carry the Gospel to the peoples of the world. Even the account of the Tower of Babel does not indicate such vast multiplicity of tongues. Yet there are that many languages—"living languages"—spoken in the world today!

Max Sherover is president of Linguaphone Institute, a world-wide organization which has thus far produced 29 language courses on phonograph records synchronized with textbooks; a method which has taught over one million students, is used by 14,000 schools and colleges throughout the world.

Mr. Sherover came to America at the age of 14, when he first heard English spoken. For years he has experimented with the possibility of imparting instruction during sleep by means of a "Cerebrophone." He and his invention have been featured in many publications here and abroad. Today Mr. Sherover enjoys a wide reputation for being well-informed, not only on the subject of learning languages, but on the implications of the whole art of communication and semantics.

This bewildering figure need not frighten us. It really is not necessary to know all these languages to play an effective role in international affairs. Of this amazing total of tongues, about forty languages can serve every practical purpose. These forty were considered important by those charged with the linguistic problems of the strategy of World War II. Courses in them were made available to the armed forces. Actually, even this formidable figure of forty tongues could be reduced to about sixteen essential languages. These are indispensable to effective world-wide communication, propaganda, and the problems of political and military direction.

Of course, one can function adequately in this multilingual world, even without knowing all of these sixteen tongues:

> English, French, Spanish, German, Italian, Portuguese, Russian, Swedish, Arabic, Chinese, Hindustani, Malay, Bengali, Persian, Japanese, Polish.

Occasionally some languages, not in this list, may be imperative for a special purpose. However, the minimum standard for an average person must be a bilingual status—a fluent conversational command of *two* languages, and possibly more. Well educated people should be able to feel at home in four to six languages. Linguistic isolation behind one language is no longer practical.

America is destined to be the managing trustee of Western civilization—the missionary of technology and mass production as well as the advocate of a standard of living of which the present American norm is a mere hint of the ultimate possibilities for the enrichment of life.

Such an historical mission implies the ability to lead the world in science, industry, and management. Implicit in it is the spread of the Western concept of the dignity of the individual and respect for his rights. This conception carries the seed of basic democratic ideals and the broad vision of liberty rooted in the Declaration of Independence and in the Bill of Rights.

This goal implies a ready ability to carry on communication with the peoples of the world on a high level of understanding. It means a greater foreign language facility among a larger number of Americans. We, of necessity, must become language and speech-minded. Without a clear understanding of the people with whom we must come into contact, leadership and influence cannot be truly effective.

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[*] See inside front cover.

To command, one must understand. To cooperate and obey, one must also understand. In teaching and learning there must be language communication between teacher and pupil; between officer and private, among allies and also between opponents. Modern war has impressed on the world the value of even knowing the enemy's language and culture. The postwar period with its distressing uncertainties and chaos accentuates our linguistic poverty. Language is a weapon in war, but it is an even more potent tool for peace.

For the first time in history world leadership is the responsibility of a nation which seeks no self-aggrandisement, territorial expansion, or colonial possessions. Such a nation also should possess the indispensable attribute of guidance in a multilingual world. The citizens of such nation in mufti or uniform must be multilingual.

In bringing to our world-neighbors the gifts of peace, food and medicine, clothes and materials, machinery and the "know how" we must also be able to present these in the language of the recipient if we don't want the beneficiary (living in a world of distrust and fear) to look the gift horse in the mouth.

II

If you want to become effective, you should make up your mind to know at least one language *in addition* to a thorough knowledge of your mother tongue. Immediately you have done this, you have *doubled* your potential usefulness and, at the same time, you have enlarged your own mental horizon and your ability to understand other people.

Languages can be learned today without stress or strain. Our advanced knowledge of applied psychology and the modern scientific techniques in teaching have made the fluent conversational mastery of a foreign language child's play compared to the tedious and laborious frettings and worries with Greek and Latin or with the old-fashioned and outmoded academic approach to high school or college French or Spanish or German. The art of voice recording and high fidelity reproduction on inexpensive record players make it possible now to listen to good models of foreign speech in the privacy of one's home. This electronic age which has already conquered distance and compressed time and space into a mathematical equation has revolutionized language learning. We still need the will and cooperation of the learner.

For years, I have experimented with a technique to "short-circuit" the lazy student's resistance to learning by teaching him a foreign language during his sleep. Sadly, I found that this panacea will not work *without the student's deliberate interest and conscious cooperation*. But I shall tell this fascinating story on some future occasion.

III

The prospective student might ask: Which language shall I learn? How long will it take? What use shall I put it to after I have learned it? He may also ask: Can I learn to speak a foreign language? How shall I learn? What method shall I use? How far shall I go into the language?

We shall now deal with these questions, as they are the main purpose of this article.

What language shall I learn? It does not really matter. You can learn any language you choose. Your choice should, of course, have a great deal to do with your background, your occupation, and the field in which you want to function. Specific advice as to choice is not possible here. Only general guides can be suggested. You will, of course, consult your colleagues and superiors. Also, in given situations, you may have no choice but to follow directives. In either case, the language chosen can be, and will be, learned by you. General Stilwell's knowledge of Chinese is proverbial. Thousands of Americans have proven that they can acquire an at-homeness in such exotic languages as Burmese, Swahili, Tagalog, Vissayan, Tamil, Korean, Bantu, etc. The number of Americans who have enviable facility in conversational French, Spanish, German, Greek, Turkish, Serbo-Croat, Czech, Russian, Norwegian, Danish, Finnish, Hungarian, etc. is considerable. Some of these tongues were learned under the

> **" . . . many of the difficulties encountered . . . could have been more expeditiously and efficiently resolved if there had been a common meeting ground of language."**
>
> **General Jacob L. Devers on his experiences in the late war. . . .**

war-stress of a "must," others as an avocation. Your choice will be made in response to a compelling need or a personal inclination.

How long will it take? The first day, after an hour's playful learning you will find yourself able to know the basic sounds, the vowels, consonants, and diphthongs and the alphabet of the "easier" languages—those having a romance or anglo-saxon background. The others will get you to this point in a few lessons. Step by step you will speak (if you learn by the Direct Conversational Method) an assortment of useful *sentences,* not single, isolated, unconnected words. You will be able to exchange the common greetings, phrases of thanks and simple questions and answers. Each day, with each lesson, your knowledge will grow and expand. Gradually, you will find that words and phrases occurring in other sentences can be transposed and formed into new ones to be used in a new context.

To what use shall I put the language? As you go forward and get the "Sprachgefühl" (feel of the language) you will find fascination in its ever wider use. Your vocabulary will pile up, soon exceeding that of the poorly educated native. Not long after you will find yourself tuning in on the foreign radio station and experiencing an inner thrill and satisfaction at finding that strange meaningless jumble of sound thoroughly intelligible and meaningful. Here you need no further advice. You'll shop for magazines, newspapers, and books in that language. You'll attend its operas, movies, and theatres (where possible). You'll invest in a dictionary. You'll converse with people who speak the language.

At this point you may find yourself an addict. You'll want to know more, and it will not hurt. Having overcome the mental hazard and fear of speaking in a foreign tongue your appetite may grow. "On your own," you'll reach out for still another language and become a language "collector" with the same zest as your friend, the philatelist, reaches out for ever new stamps. Or, perhaps, you are the temperamental "specialist" and will stick to a chosen field; Romance, Scandinavian, Slavonic, Semitic, or some other branch of the linguistic family tree. Don't try Hittite, Phoenician, Aramaic or Sanskrit unless you expect to retire to the ivory tower of philology or the study of "dead" tongues.

The use you will put your knowledge to will be governed by who you are, what you are, and where you are. Militarily, in private business, in travel, in the practice of your profession, in serving your cause, in social relationship, everywhere you will find this priceless asset bringing you satisfaction, joy and reward.

Can I learn to speak a foreign language? The secret of language learning is that it *seems* more difficult than it actually is. If I have not already succeeded in convincing you that you can learn and you insist, "I can never learn a foreign language!" my answer must be: That is not true. You already speak a "foreign" language. You learned it as a child. When you arrived here as a "blessed event," I suspect you could not speak a word. No doubt you howled and made dad walk the floor to assuage your protest at having come here sans clothes, sans language. The point is you knew no English at all—a language which for most foreigners (including this one who never heard English spoken till the age of 14) is a most difficult language to learn. Its spelling, its Topsy-grown grammar, inconsistencies of usage, each rule having at least one exception, with its Anglicisms and Americanisms; with its ornate phrasing, its expressive beauty, and its virile slang which quickly manages to earn legitimacy; with its wealth of dialect and localisms, with its free borrowing of words from every clime, with its genius for new word coinage—is it any wonder that foreigners deserve a medal for having ventured into this verbal labyrinth? And please know that millions of foreigners are eagerly coping with the intricacies and hurdles of English because they too must find their way into our thinking. For them, too, to understand us may well be a matter of life or death.

Yes, indeed, if you have learned to speak English you have already well served your linguistic apprenticeship. You can learn any language spoken by any member of the human race. They are generally easier. For one thing, none of them can boast a vocabulary of 600,000 words (Oxford Dictionary of the English Language). Their structure is generally logical, sometimes quite simple. Pronunciation in most of them is phonetic, orderly and uniform.

". . . an American officer who wants to succeed in the future may have to show his proficiency in commanding some sort of foreign troops."

From a lecture by Senator Henry Cabot Lodge before the Command and General Staff College. . . .

But do not start out with the notion that you must become a perfectionist in the foreign language. By all means, make an occasional mistake. Laugh at the incongruity of a "faux pas" but don't make the same error twice. Mistakes are stepping stones in learning.

Don't add to the amusement of the foreigner, as the famished G.I. in Paris did, when he told the waiter: *Je suis femme* when what he really meant was *J'ai faim;* then wishing to light his cigarette asked for *Un omelette,* meaning *Un alumette.* Then there were the two boys on furlough in Paris, hungry and thirsty but nary a word of French. Seated at a sidewalk cafe table, one overhead a request to the waiter by a guest at the adjoining table "Un verre d'eau!" The Yank's good ear for languages caught this phrase perfectly. In his turn he demanded from the waiter, though not too precisely, "Verre d'eau!" When the two glasses were put down the Yanks stared, lifted their glasses, smelled and finally ventured a sip. One turned to the other: "If I were not positive that this is verre-de-eau I'd swear it was plain water." This language lesson was not lost on the Yanks. Soon they knew how to ask for other drinks with a Verre d'eau on the side.

Even in the first World War and in the postwar peace negotiations language was a factor. Senator Robert La Follette headed an investigation to learn why some members of the Foreign Relations Committee needed so many "assistants," aides de camp, etc., many of whom turned out to be sons, nephews, in-laws, etc., all of whom seemed eager to journey to France on a comfortable junket. Questioning some of the prospective emissaries Senator La Follette casually asked one aspirant: "By the way, since you wish to go to France, do you speak French?" "Well, I can get along in French quite well with taxi-drivers, waiters and hotel clerks," announced the respondent. La Follette ended that session by asking the victim, "Supposing there are no taxi-drivers, waiters and hotel clerks at this conference in Versailles?"

Of course we should prepare our boys when they go abroad not to pull the boner the Russian troops did when they entered a town in Yugoslavia. Seeing a baker's window chockfull of nice fresh rolls and white bread (having lived on coarse black bread for months) they proffered their money to the smiling girl behind the counter and asked for "Bulki" (Russian for rolls) whereas the same word and sound in the Serb language was the name for that part of the anatomy concealed by a brassiere. They got no rolls.

How shall I learn? There are many ways by which people have tried to learn. We all know about the so-called "four years of French student" whose number is legion and none of whom can sustain a conversation in French which any Frenchman would understand.

I recall on one of my business trips to Europe, running into an American tourist having great difficulty in conveying her wishes to a waiter in Cologne. Hearing the commotion I offered my help, which settled that misunderstanding. The lady assured me that the waiter's German was unintelligible and she really doubted whether he knew the language. She was quite certain about her faultless speech for she informed me that she knew her German grammar and had been lecturing on German literature at a mid-Western girls' college. I am sure she knew more of German grammar and literature than the Cologne waiter, but for conversation in German I know I would get on better with him, for even while she did speak German with me she reached for an English phrase or idiom in almost every sentence.

SEPTEMBER 21. "Dinner at Chiang K'ai-shek's. . . . . For the first time I carried on a conversation with the G-mo in Chinese without any help."

General Joseph W. Stilwell in *The Stilwell Papers.*
Courtesy William Sloan Associates, Publishers.

How shall you learn? There are better ways than the old reverse-method of "grammar first-speech next or maybe"—here are some:

Gay lotharios can tell you that they have learned good "colloquial speech" from an "affaire d'amour" which is reputed to be a droll way of mastering a language. It might do for those who do not mind that their hearers can instantly detect the source of that linguistic virtuosity. It suffers somewhat from reflecting the milieu in which it was acquired; the turn of phrase and idiom is apt to be too one-sided. It is not to be recommended.

A more practical way, in fact, the best way, is to live with a foreign family of fair educational status but one where the boarder or guest will not hear a word of English spoken. Thus, in being forced to maintain communication with every member of the household about almost every subject that comes up, he would, fairly rapidly, gain not only a rounded vocabulary but good acceptable speech patterns. While this method has been tried and tested and proven as the most effective, it is not practical for the majority of learners. It would make too great an inroad on the student's time, career, and pocketbook.

How then shall I learn? Learn the way you learned to speak your mother tongue—by listening. That is nature's way. We can hardly improve on that. You learned by hearing the language spoken. First you listened—then you spoke. You heard a phrase—a complete sentence. No one read a list of words from the dictionary to you. The sentence spoken denoted a situation or dramatized an action, the object spoken about was pointed to or handled. You heard, you saw, you understood, and you spoke. Not a word about grammar, about parsing or syntax, or parts of speech, rules or exceptions was ever said by anyone to you while you were amassing your knowledge of the language. You spoke before you knew how to spell, you spoke before you could read or write. And most important, you did not learn by translation from one language into another, and there was no interpreter there to help you. Nor did anyone send you to the dictionary for definitions or meanings. You just imitated the rhythm and tone, the emphasis and accent and you grew up speaking the recognizable speech pattern of the environment and community in which you were reared. That is nature's method. Applied to the modern method of teaching it is called the Direct Method, the Conversational Method —auditory training by listening to a living speaker or a good phonograph record. Records have two advantages: their speakers never tire and never get laryngitis.

In choosing a method you must make sure that you are not learning something you will have to unlearn and correct later on. It is just as easy to learn the right way as to make false starts. The method should be one that gives you a requisite amount of ear-training whereby you can *hear* foreign speech (without at the same time being exposed to listening to a word of English). Your auditory attention must not be distracted by a spoken or written translation while you are concentrating on listening to the foreign speaker. Listen patiently several times without moving your lips, without any attempt at imitation, or immediate repetition. Only after you have heard the selected part of the lesson over and over, and the sound has become implanted in your auditory memory, will you repeat and find that you do so without any kind of an accent. Your speech will be correct, your enunciation good, your imitation perfect because you have never heard it spoken otherwise.

You should not always listen to the same speaker. There must be several speakers, both male and female, with varying types of voices, for no two speakers sound exactly alike. In short, you must surround yourself with a foreign language environment by having the speakers available to you in the privacy of your study or your quarters; talking for you in a natural conversational manner (not declamatory, stagey, or professorial), the same as you would find such a group conversing when visiting with them.

Once you have mastered the conversational phase of the language, all other angles of it will come to you with rapidity. Spelling, grammar, reading, writing, composing, translating will be readily acquired with routine practice and frequent contact with the language.

And as your familiarity with the foreign tongue grows, you will make an interesting discovery. You will find that you are gaining a better grasp on your own language. By learning to articulate your ideas through another language medium, you will find that you become more discriminating in your choice of words, structure of sentence, turn of phrase. You will then fall in love with words, associate them, explore their origins and interlingual relationships. You will see the world and understand its peoples through two avenues of understanding—your horizon will stretch, your personality will have become enlarged. You will be a two-, eventually a three-language, man. Thus, you will have most effectively multiplied your personality.

How far should I go into the language? That is really up to you. How far have you gone and how far are you going with English? You speak it, you read it, you listen to it. You go to plays, concerts, movies, games, and in all of these activities you use whatever you know of your own language. Do exactly the same with the newly learned tongue and go as far as you can according to your opportunities and needs. You are alive and, whether or not you are aware of it, you keep on learning; learning is living; the alert and the great do their learning consciously and purposively. They are not willing to wait for knowledge to come to them. They go out to meet it. The world belongs to them.

Language is the armory of the human mind, and at once contains the trophies of its past and the weapons of its future conquests.

Coleridge.

100th ANNIVERSARY AT FORT BLISS

FORT BLISS, the post where thousands of cavalrymen polished their teeth on sand in the bondocs, where the First Cavalry Division was stationed for 21 years, where rockets now arch into the stratosphere, will observe its 100th anniversary in a gigantic three-day celebration on November 5, 6 and 7.

Keynote of the big birthday party will be military progress at the colorful Border post during 100 years—the change from Indian warfare to guided missile operations. Official insignia for the celebration shows a huge rocket rising from the old Magoffinsville station for Fort Bliss troops. The order establishing Fort Bliss, which required months for transmission from Washington to the Border in 1848, will be flown from Washington in a matter of hours. The Flag of Liberation, which flew over the three Axis capitals after their successive defeats, will be raised in downtown El Paso where the first Fort Bliss troops bivouacked.

The transition from the old to the new, from tomahawks to rockets, will be emphasized in several events of the Centennial, and the story of progress will pay proper tribute to the development of the Cavalry as well as other units through the years. No detail will be overlooked—from the Mounted Rifles' arrival at Fort Bliss in 1857 to transformation of the First Cavalry Division into an infantry division in 1943. In a pageant-parade on Nov. 6, members of the El Paso Sheriff's Posse will portray various steps in the development of Cavalry troops. Uniforms and equipment will be authentic. The Army Camel train, which passed through Fort Bliss in 1857, will even come in for mention.

In view of the close relationship between Cavalry units and the post, Pacific-hardened troopers of the First Cavalry Division Association have elected to hold their first reunion in El Paso on Nov. 8 and 9 immediately following the Centennial celebration. All persons who served with any unit of the First Cavalry Division at any time, in the United States or overseas, are welcome to attend the reunion at its long-time home station on the Border. Reservations should be sent to Chapter One, First Cavalry Division Association, Post Office Box 201, El Paso, Texas. Over 1000 former members of the trail-blazing unit which helped lead the way to Tokyo via the Admiralty and Philippine Islands are expected to attend.

El Paso folk who grew up with the Cavalry are responsible for the Centennial celebration. They have planned the many events with a hearty appreciation of the good will existing between the community and the nearby post. It will be the first time in history that a community has honored a neighboring military post in such a way.

In view of all this, Army officials have been highly enthusiastic about the Centennial idea. General Omar Bradley, chief-of-staff of the Army, has accepted an invitation to attend and will be the principal guest of honor. Hundreds of military leaders, who served at the Border Post during their careers, are being invited. Their presence will add considerably to the rich military pageantry to be unveiled for the occasion in the lively and friendly city at The Pass of the North.

A feature of the observance will be the dedication of a full-scale model of early Fort Bliss. The replica has been constructed on the old parade ground area just east of Noel Field and the yellow buildings, which once housed the Seventh and Eighth Cavalry Regiments. Constructed with funds donated by El Pasoans, the replica will be a permanent attraction at Fort Bliss.

Arrangements have been completed by the Adjutant General's Exhibit Section to place equipment valued at over $300,000 on display in the replica. The model will be dedicated in appropriate ceremonies on the morning of Nov. 5 and opened to the public that afternoon. Of interest at the replica on the opening day will be sale of the Fort Bliss Centennial commemorative stamp. The stamps will be sold by a "two-gun postmaster," garbed in frontier attire, one day before they go on sale in other parts of the United States.

Included in the Centennial program will be an International Polo Tournament which will follow up the revival of polo in the Southwest this Spring after an absence of nearly 10 years. Twelve teams from New Mexico, Texas and Mexico are expected to enter. Tournament dates are from November 5-14, and all games will be played on the Armstrong Polo Field at the post.

Post authorities have received word from John J. Sheerin of San Antonio that he will bring his great team here for the matches. The line-up of this fast-riding four includes Cecil Smith, internationally famous 10-goal star, Bill Barry and Larry Sheerin.

Also expected to be present is the El Ranchito Polo Club of Fort Worth, which won the Fort Bliss Spring Polo Tournament in mid-May by defeating the Lamesa Polo Club for the championship, 8-7. The Lamesa Club has also been invited to participate in the tournament. Other fours scheduled to come are the Big Spring, Dallas, San Angelo, Dalhart, Abilene, Mexico City, Juarez, the Pecos Valley Horsemen and New Mexico Military Institute aggregations. A reception for polo players will be held in the ballroom of the Hilton Hotel in the evening of Nov. 4, just prior to start of the three-day Centennial.

An odd sidelight of the Centennial will be reenactment of a colorful old custom in the ceremony placing souvenir coins on sale. One hundred years ago when traders plied the old Santa Fe trail between Chihuahua, Mexico and Independence, Mo., traders wrapped silver pesos in rawhide before transporting their profits back to the states. The rawhide hardened and could only be opened by an axe. Marauding Indians were never suspicious about the contents.

This ancient custom will offer a picturesque opening for sale of the Centennial coins. Rawhide will be wrapped around the coins in advance, and prominent officials, wielding axes, will cut open the hardened covering. The coin will be emblazoned with the official insignia consisting of the rocket and the old Magoffinsville post.

Several concerts will be given by the famous Army Ground Forces Band of 110 pieces. A brilliant reception will be held on the night of Nov. 5 in the El Paso Country Club. On the following night a gigantic 100th Anniversary Fiesta and Ball will be staged for enlisted men from Fort Bliss, Biggs Field, William Beaumont General Hospital, Holloman Air Base and the White Sands Proving Grounds.

A beautiful circle memorial will be dedicated at Fort Bliss on the opening day. It will carry bronze tablets in honor of the 100th Anniversary of the post, war dead and the 200th New Mexico Anti-aircraft Regiment.

Dozens of other events, including many social functions, are being planned by the Centennial executive committee. In charge of the entire program are Major Gen. John L. Homer, commanding general of Fort Bliss, Mayor Dan Ponder, and George G. Matkin, chairman of the military affairs committee of the El Paso Chamber of Commerce.

Streets of the city will be decorated in elaborate style for the occasion, and trucks, taxis and busses are scheduled to appear in colorful array on the opening day. Special menus are being prepared by restauranteurs. An avenue of flags will be arranged along Pershing Drive at entrance to the post.

Hundreds of citizens in the Border City have been working for months to give the celebration a brilliancy, color and pageantry commensurate with the 100-year-record of the famous old post.

EDITORIALS

Policy

There are many reasons, unnecessary to set forth here, why a change of editors on the JOURNAL Staff should require a statement of future policy. Among the foremost, however, is our need to increase our circulation materially. To do this, the prospective subscribers must be told what they are to buy. The present readers, who are our best source of advertising, must have something to brag about. So here we go.

We believe that the present is another turning point in the affairs of the ARMORED CAVALRY JOURNAL. For many years it has upheld the finest traditions of the Arme Blanche. The magazine is solvent financially and its reputation is unimpeachable. Nevertheless, while it can rest with honor in the spirit of the great Cavalry leaders of yesterday, we prefer to see it vault to the shoulders of George S. Patton and from that point of vantage scan the horizon for the leaders of tomorrow. For the Arme Blanche, the Schnelletruppen, or the Armored Cavalry—whatever be its name—the horizons have never been wider.

New weapons impose greater demands upon leadership, while teamwork between the so-called "branches" of yesterday is at a premium. It is obvious that the young leader of today who is nurtured on mobility and the team idea is the logical heir to the victories of tomorrow. The Armored Team stands ready to afford him his opportunity. So it should be our task to stimulate the thought of our junior commanders, most of whom are grounded in the practical experiences of World War II. We must not let them think that future conflicts will follow the same pattern.

There are some elements in the Armored Cavalry that appear confused and uncertain. There are too many in need of direction and a sense of professional security. Even the branch name is a makeshift. But the most cursory examination of the facts clearly shows this state of affairs to be transitory. What is there to fear when one reviews the accomplishments of only a few months ago? We have not exactly stood still since. And with the way open to an expanding army and expanding ideas it is only logical that the ARMORED CAVALRY JOURNAL keep its face to the future, to the end that the Infantry-Cavalry-Artillery-Tank-Engineer Team be re-welded into the harmonious whole that did so much in all Theaters to force the decisions of 1945.

We aim to produce a professional magazine dedicated to the advancement of the Armored Forces and to the interests of their devotees. Our texts will reflect the most advanced ideas available, but, nevertheless, those born of experience. We believe, for example, that historical sketches are not printable unless they point to a present-day lesson and are entertainingly presented; we think that map problems are best left to the Schools. On the other hand, we shall seek discussions of new ideas on organization, training, matériel and leadership; we welcome stories of the doings of troops in the field that will give the reader new standards to shoot at; within the limits of our narrow budget we shall print the maximum number of illustrations and typographical novelties.

Our attitude is strengthened by the wealth of material available. There is so much to be said about Armor in amphibious warfare, in airborne operations and in relation to the kaleidoscopic developments in new explosives, weapons and equipment. Only a modest increase in our circulation will permit our soliciting articles from the best military analysts of the day.

Unfortunately, there is not much comfort in this picture for the horse cavalryman. We firmly believe that, in time, the studies of the Italian and Burma campaigns, as well as those of Europe will cause the Department of the Army to reinstate horse troops to their place on the team. But until directives for the return of the horse are published we feel that space requirements preclude any attempt to force or suggest a course of action which is manifestly undesirable to the General Staff. And there are a number of top-flight periodicals which can take care of the interest of mounted sports enthusiasts.

We shall strive for frequent changes in format, headlining and titling. But the field of printing and engraving is strewn with due bills. Right now we have gone about as far as we can go. However, dear reader, there is an easy way for you to have your cake and eat it too when it comes to magazine improvements. Just turn to your nearest neighbor, take three dollars from him and send it on in his name for a subscription. Hurry, because we must raise our prices before next issue.

We hope that our expressed policies meet with your approval. In any event drop us a card. When it comes to gripe-listening we are very thick-skinned.

Merger

At this writing the prospects of merging the magazines of the Field Forces seem rather poor. The discussions have come to an impasse on the question of the composition of the Executive Council of the new magazine.

The *Infantry Journal* does an annual gross business which is many times that of the ARMORED CAVALRY JOURNAL. The latter is roughly comparable on the same basis with the *Journals* of the Field Artillery and the Coast Artillery. But the gross of the *Infantry Journal* is probably greater than that of the others combined.

Under these circumstances the Infantry Association is reluctant to accede to any proposition which will not permit control of the business by the Infantry. Its current proposal is a Council to consist of eight Infantrymen and two representatives from each of the other arms.

The primary objective of the merger is the unification of the field forces, and, perforce, the elimination of "branch consciousness." The officers of the Armored

Cavalry Association feel that a Council composed according to the Infantry proposal would nullify the very purpose of the merger. The Armored Cavalry stand, apparently supported by both the Coast and the Field Artillery, is for a Council on which all branches will initially be equally represented. Whether each should have one, two or more representatives is not important. The four Council members initially appointed would elect a President from outside their own ranks, making a Council of five all told. Members terminating their office for any reason would be replaced from the Field Forces at large. It is probable that the Reserve Corps and National Guard should also be represented either as additional members or as part of the representation of their branch.

The staff of the ARMORED CAVALRY JOURNAL have been making every attempt to solve the problem imposed by these apparently irreconcilable points of view. We believe that a Journal of the combined Arms would represent a net gain to our own subscribers. We say net, because with the advantages of a monthly magazine having ample resources would come a very definite diminution in the amount of material devoted exclusively to Armor. But our visits to the Pentagon and to Field Forces Headquarters, while showing a surprising amount of support for our views, still do not offer real solutions to the business problems connected with the merger.

Your Editor keeps in close touch with the Editor of the *Infantry Journal* and finds the latter most friendly and sympathetic to our magazine, while running a high-class periodical of his own. The *Infantry Journal* plans to provide a wider coverage for all branches. Its staff is most cooperative on all matters of interest to our readers.

We therefore hope that all our readers and subscribers will also support the *Infantry Journal*. We intend, however, to publish a magazine that no devotee of Armor can afford to be without. It will be Armor from every angle and in every detail as long as we are in business. In the present state of solvency this will be a long time. And with only 200 more subscriptions we can give you most any author you care to name.

In seeking new subscriptions we shall keep the merger possibilities carefully in mind so that no subscriber will find his funds jeopardized. Our contacts with the *Infantry Journal* insure that in the event of a merger each subscriber may elect to have his credit returned or to receive the new magazine until his regular subscription to the old expires.

—and Merger!

Being stymied by the situation just described, and believing nevertheless that some sort of merger would be of inestimable benefit to the average reader of service magazines, the Executive Council of the Armored Cavalry Association directed the Editor to meet with the Editors of the *Coast Artillery* and *Field Artillery Journals* to discuss a possible merger of the three magazines of the Supporting Arms.

This was done. It may be stated that all three Editors declared themselves solidly behind the idea. The Artillerymen are to approach their respective Association Presidents, discuss details and prepare for a meeting of Association Presidents which will begin the steps necessary to effect a merger.

The Editors determined that with the present circulation of the Journals affected, a 64-page monthly magazine could be published whose editorial content would be of interest to all readers of the several periodicals. Almost a 50% economy could be effected in the personnel assigned to the editorial staffs. Each of the Associations would initially put up an equal amount of capital, while the controlling Executive Council would also involve an equal representation of the three branches, each nominating two regular officers and one each National Guard and Reserve. Let us have your reaction to a merger of this kind.

* * *

The . . ' - - ' ' ★ - - ' ' . . ★ ' Doesn't Understand His Own Language!

How many times in how many foreign countries have you entered a restaurant with a group of the boys in search of food and drink? A group that always includes the boisterous, uninhibited "hail fellow," who invariably settles back and, in a jovial, expansive manner, issues a stream of instructions to a passing waiter, ostensibly in that individual's tongue—only to have the waiter proceed uninterrupted about his duties completely unaware that he was spoken to—and to have the speaker turn with injured pride to inform his audience that "the so-and-so doesn't understand his own language!"

Such a situation used to be funny. It isn't any longer. Today, along the border of the Trieste Free Territory, American soldiers are asking Italians and Slovenes to explain a missing pass. Others are checking the documents of Koreans crossing the demarcation line between the occupation zones in that country. Some are operating Graves Registration units in France, and occupying the islands of Japan. More are members of a mission in Greece and still others are observers on the United Nations Truce Team in Palestine. And so throughout the world.

Are these Americans able to communicate instructions and understand explanations? Generally speaking they are not. They are dependent on the aid of interpreters who are few in number and whose ability has suffered through time and circumstance.

Languages are essential today. We can't expect to do justice to occupation, military government, mission, intelligence, and military attaché assignments without a knowledge of the language around us. Above all we must have this knowledge as the key to meeting and understanding the peoples of the world and of promoting their understanding of us.

The JOURNAL is in the language business. Consult our advertising pages for the best answer to your problem.

CARD

Instructional Methods in the Army

by Henry C. Porter

ARMY officers are more alert to training problems and instructional methods than are the members of most other professions. In many of the other professions the practitioner has very little interest in such problems after the formal period of education is completed. The Army officer, on the other hand, often becomes an instructor on his first assignment and spends most of his career in close contact with the instructional task. In the military educational plan every officer receives an education in his branch which is equivalent to the graduate work in other professions leading to a master's degree. One half of the officer corps receives further education in The Command and General Staff College, and other selected officers go on to education on higher levels. The number of officers who have received education equivalent to the Ph.D. would astound anyone not familiar with the military educational system. Interspersed with this schooling is duty in which the officer may serve as an instructor in service schools or in civilian component units; or he may be directly concerned with the training of regular troops. Is it any wonder then that members of the military profession have so much interest in the techniques used in the instructional process?

This interest in instruction is not only basic to the individual officer but it also is essential to our national military policy. The regular military establishment of this country is charged with the mobilization and training of our man power in an emergency. This requires that every officer be well educated in his field and be capable of training others. Army officers who are good instructors multiply their effectiveness many times in time of war.

In the last war over ten million men passed through our armed services. These men were trained to the point where they were able to compete on even terms with the professional forces of our enemies. The successful accomplishment of this task can be attributed to the energy of our military and to the training techniques which were employed. We have a tendency to treat these techniques with a lack of emphasis when we consider them along with the many other valuable lessons learned in this war. Too often military personnel take these things for granted; but it behooves every officer to take stock of the characteristics which made Army instruction effective, and to keep these instructional techniques working for him.

Army training has not actually discovered new principles in the field of instruction—these principles come from the educators and psychologists; but the Army has made the realistic application of these principles so effective that its techniques have attracted the attention of civilian educators. The educators have been helpful in pointing out the characteristics which made Army instruction successful. In many cases they have pointed out techniques used in the Army which they feel might well be used in their own schools. Now when you do something so well that it attracts the at-

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The Research and Evaluation Division of The Armored School is charged with the presentation of the instructor training program. Other activities include a reading laboratory; a course in the preparation of military monographs based in military research; and research in military history, which in turn develops reports on armor's role in modern warfare. Liaison is maintained with other service schools and the civilian field.

The Armored School's Civilian Educational Advisor analyzes the Army's excellent educational system, where a commission usually equals a Ph.D.

tention of the experts, it might be well to take stock of your strengths and resolve to apply them in all training activities. What characteristics of Army instructional methods do educators consider good? What characteristics should the Army officer strive to maintain in military training? These questions will be answered in this article.

INSTRUCTOR TRAINING

The Army's program for in-service training of instructors is one of the characteristics of military instruction which has received wide acclaim from civilian educator observers. The fact that most Army officers are good instructors can be attributed, in part, to the attention which is given to this instructor training program. Service schools have in their organization provisions for the training and retraining of their instructors; training divisions have similar instruction, and cadre schools in troop units emphasize the training of noncommissioned officers as instructors. The concept that our officers and noncommissioned officers must be trained instructors was well stated by General Marshall in his Biennial Report: "—and probably the most important mission of the Regular Army is to provide the knowledge, the expert personnel, and the installations for training the citizen-soldier upon whom, in my view, the future peace of the world largely depends."

The president of one of our large Middle Western universities, while visiting The Armored School, expressed admiration for the high level of instruction which was being presented there. He was amazed by the fact that this type of instruction could be given by officers who were serving only a two- or three-year tour of duty; because in civilian education on a comparable level the instructor is considered just "broken in" after this time. The Assistant Commandant, Brigadier General Bruce C. Clarke, explained that at The Armored School the officer has a good background in the subject matter when he comes to the School and that the Army trains its instructors by an intensive course in principles and methods followed by a program of supervision which encourages in-service growth. This system has certain advantages which were pointed out by the Assistant Commandant and recognized by the visiting professor: First, personnel with various Army experiences serve to enrich both the staff and the curriculum. Secondly, instruction is more practical when presented by an instructor who is in close contact with the field. There is a de-emphasis of the so-called "school solution." Instructors do not get into the "institutional rut." Thirdly, the instructor adds to his own professional background, and the entire military educational system profits because of its great wealth of experienced officers capable of training others.

At The Armored School all instructors are required to take a 44-hour course which includes psychological principles basic to learning, preparation and organization of instructional materials, methods used in the instructional process, preparation and use of training aids, speech techniques, and the construction of various means for the evaluation of student achievement. In this course the student-instructor presents several short lessons from the field of subject matter to which he will be assigned. Wide use is made of recording equipment to analyze speech techniques and to enable the student to hear himself as others will hear him. The needs of the student-instructor and the problems of the School determine the emphasis which is placed on the subject matter. The officer who will be largely concerned with oral presentation of material from the platform receives a course fitted to his specific needs, while the noncommissioned officer receives instruction which will enable him to serve as an assistant instructor or to handle small groups in laboratory-type instruction.

After completing this course the instructor is assigned instructional duties by his department. He prepares each lesson thoroughly and rehearses at least once before a committee, which is often referred to as a "murder board," before he presents the lesson to a class. His progress is marked by steady improvement which is encouraged by a program of supervision including group conferences, class visitation, visiting other instructors, and refresher courses in instructional techniques.

The attention given to the training of instructors in the Army pays dividends. It cannot be assumed that knowledge of the subject makes an instructor. He must also know how to present his subject to others. These two characteristics, along with an acceptable personality, leadership qualities, and a constructive attitude toward his work, will produce an outstanding instructor. These qualities can be and are developed in the Army's training program.

These instructor training courses have become an integral part of Army training programs. Directives from higher headquarters usually require that methods of instruction be included in troop schools. When these courses are set up the following principles are usually the factors which determine the nature of the course:

a. The course must fit the specific needs of the situation.
b. Practical work is planned first. This is planned to correspond with the job the men will be doing.
c. Subject matter is presented which will enable the soldier to perform effectively the practical work.
d. All subject matter is presented from the standpoint of how the soldier will *use* it.
e. Wide use is made of demonstration lessons.

It can be readily understood why observers admire the in-service training of Army instructors. The program is functional, it produces results, and it adds materially to the effectiveness of our military establishment.

NEW TECHNIQUES

Although no new educational principles were evolved in military instruction, there were many advances in detailed techniques. The criterion for any recommended technique was, "Will it work?" There was no reluctance to abandon the traditional method if another method seemed to be better. Necessity required that large numbers be well trained in the shortest time possible and by as few instructors as possible. Techniques for mass training were developed. One well-trained officer often handled a class of several hundred trainees with the assistance of a few noncommissioned officers. Our replacement training centers used such techniques as the county fair, the rifle circle, the group performance method, the coach-and-pupil method, and the committee system. The results obtained had never been equaled in any training program, military or civilian.

Where the situation demanded, classes were kept small and individual instruction was emphasized. In the training of specialists this was highly desirable. Procedures were standardized to the point where men trained in one class varied little from men trained by another instructor.

Great strides were taken in the field of special training. The armed forces, after rejecting over 200,000 men because of illiteracy, eventually inducted twice that number who had never reached the fourth grade standard of literacy, and brought a heavy percentage of them up to or beyond that level by means of from two to three months of intensive education. The materials for this training were prepared by the armed forces, and instructors were selected with great care. A survey in 1943 showed that 75% of these instructors had been teachers in civilian life. In this training the Army entered the field of adult education on a scale never before contemplated, and salvaged man power which would otherwise have been lost.

The Army method of teaching languages has been received so favorably that it has, with variations, been accepted by many of our colleges and universities. At Yale, beginning courses in modern languages are now being taught by the intensive method similar to that used in the Army. Wide use is made of recording machines, and as a consequence seven instructors are able to train 150 men, whereas without machines 13 teachers were formerly required to instruct 30 men. A survey revealed that many of our institutions of higher learning are modifying their language programs from the lecture-reading system to the laboratory technique as a result of Army experience.

Army instruction is characterized by the flexibility of thought relative to new methods and techniques. The instructor is constantly alert to the better way to train his men. The fact that the instructional job has previously been done in a certain way means very little to the good instructor if he thinks he has a new method to do the job better. Army instructors are constantly developing and using such new techniques to vitalize their instruction. They realize that it is possible to make instruction interesting to men if they (the instructors) can but find the right method.

New emphasis is placed upon the conference method to secure more effective learning through student participation. Seminars, panels, and symposiums are widely used. Skits and dialogues lend variety to army instruction. Many unusual devices which have no formal name are constantly being employed by instructors to enliven the presentation. Mnemonic devices are suggested to aid in the recall of certain facts or principles which are not closely associated. The otherwise meaningless word FITCAL serves to remind the tanker that the steps in the maintenance of his radio equipment are: feel, inspect, tighten, clean, adjust, and lubricate. Certainly many of these techniques are not new, but the constant effort to find the best way to get the job done is one aspect of military instruction which every officer should seek to apply.

SELECTION OF MEN

Another recognized characteristic of Army instruction is the classification system through which men are selected for training. It is not necessary in the Army, as it sometimes is in the traditional civilian education system, to present exploratory courses to determine the men's suitability for training in a specific field. The soldier is classified as to his general ability and his aptitude, by means of a comprehensive testing program. As a result of these tests the man is placed into one of the Army Grades, each grade representing a certain ability. The selection of men for training is made on the basis of their abilities; when a man is assigned to a course it can be reasonably assumed that he is capable of success. "Flunks" are kept to a minimum through selection before training.

In the selection of men, expectancy tables are often used. From these tables the probable success of a group can be predicted. The minimum score required for entrance into a course can be adjusted to fit the needs of the situation and the number of men available for training can be raised. If, however, a large number of men are needed, the standard must be lowered, but with the realization that more men will be unsuccessful. The table below is typical of expectancy tables.

Percentage of men from each Army Grade who made average or better in training programs in The Armored School.

Army Test	Course	Number of Students	Army Grades V	IV	III	II	I
ACGT	Tank Mechanics	237	3%	13%	42%	54%	81%
Mechanical Aptitude	Tank Mechanics	237	1%	7%	27%	66%	93%
Radio-Telegraph Operator Aptitude	Radio Operators	721	11%	25%	44%	68%	85%

It can be readily seen that a man in Army Grade III AGCT has 42 chances in 100 of doing average or better in the Tank Mechanics Course at The Armored School, while a Grade IV man has only 13 chances. The table also indicates that it is advisable to use aptitude tests along with classification tests in selecting men for training in specific jobs.

The selection of men for training is one of the strengths of Army instruction. Every effort is made to get the soldier into his proper job. This principle must be applied on all levels, even down to the individual instructor who is faced with the problem of individual differences in his class. Selection before training enables our military to train men in a shorter time—certainly an important consideration in our defense pattern.

Tests

"No training organization uses tests as much and with such effectiveness as do the military services." This statement was taken from one of our civilian educational journals. The truth of this statement is apparent when one reviews the soldier's experience with testing programs. The young man is admitted into the Army today after having passed a test. Early in his military life he is classified, as to his ability and aptitudes, by means of tests. His promotions under the career plan will be determined by tests. The degree of success achieved in training programs and specialists courses will be measured by tests. The efficiency of his unit will be determined in a like manner. Many of the officers and warrant officers who lead him have been carefully selected, in part, by a testing program. The job of the soldier is probably the most objectively evaluated career a young man could choose; certainly he will progress according to his merits.

The Army Alpha Tests which were used in World War I touched off an era of testing in industry and education which produced far-reaching results, even to the point of overemphasis. In World War II the armed services made such realistic application of the results obtained from classification, aptitude, educational achievement, and special tests that they have opened new fields in the use of tests. We know that military classification and training were materially advanced by this testing program. Just what effect this program will have on fields other than military is hard to conjecture; but it seems reasonable to predict that the vast store of data which the Army has compiled as a result of these tests will be used in research and analysis of problems relative not only to the military, but also to such other fields as education and industry.

Great strides have been taken by the Army in the matter of achievement tests. Service schools are vitally concerned with the problem of developing better means of evaluation for the measurement of student achievement. They have progressed to the point where tests given in service schools today can be advantageously compared with tests given in our civilian colleges and universities. This has been made possible by in-service training of instructors in test construction and by the alertness of service school administrators. Wide use is made of the objective type written test, but other types of tests are recognized as necessary to make measurements valid. In troop instruction the performance test is used along with observation techniques which are made more and more objective through the use of check lists. Every effort is made to insure that the examination stage of the instructional situation is functional.

Realistic Application

An analysis of the soldier's job will reveal that primarily he is called upon to *do* something. Most of our instruction is designed to train men to *do;* even subject matter of the informational type is of value only in so far as it affects the man's actions. We have all used the old saw, "We learn to do by doing"; but we often do not realize that this idea is the keystone to the Army training structure. In order for the soldier to learn he must be *told* what he is to do, *shown* how to do, and then given an opportunity to practice until he is able to *do*. This is a simple approach to instruction, but it is psychologically sound. The Army instructor makes extensive use of this *tell—show—do* technique. The ratio of time spent in presentation to time spent in application depends, of course, upon the subject and the state of training of the troops; but in general, the Army instructional program spends as much time in practical exercises as in the presentation of the subject matter—often it spends more.

Application in Army instruction is characterized by the use of knowledge, skills, and abilities in the solution of problem-type exercises rather than by an overemphasis of drill-type repetitions. It is considered more practical to train men in how to solve problems than to present formulae for situations which may change, leaving the soldier virtually untrained. Of course, in the initial training of the soldier it is necessary that he learn many things through rote-drill, but this type training is usually confined to basic instruction.

This emphasis on applicatory exercises in training is justified. One battalion commander who was in combat in Europe said that his troops rarely faced a situation the counterpart of which had not been previously met in training. Troops who fought in the early stages of the war, and trained with units later, often remarked that the training was more exacting than combat. This type of instruction saved lives.

UTILITARIAN MATERIALS

The Army has made great progress in the development of instructional materials. A comparison of some of our older field manuals to the newer texts will reveal that the utility of the material has become the criterion for the writing and selection of field manuals and other texts. Instructional materials have become functional; they are written to be used. The fact that the average soldier in World War II had completed the tenth grade in school, and was almost four school years above his statistical counterpart of World War I, may have encouraged this development of better materials to enable this more capable soldier to learn more through study. Certainly the fact that the modern army has developed to such a technological point that large numbers of specialists are needed, requires instructional materials which are usable both for the training of these men and for their use in the employment of the equipment.

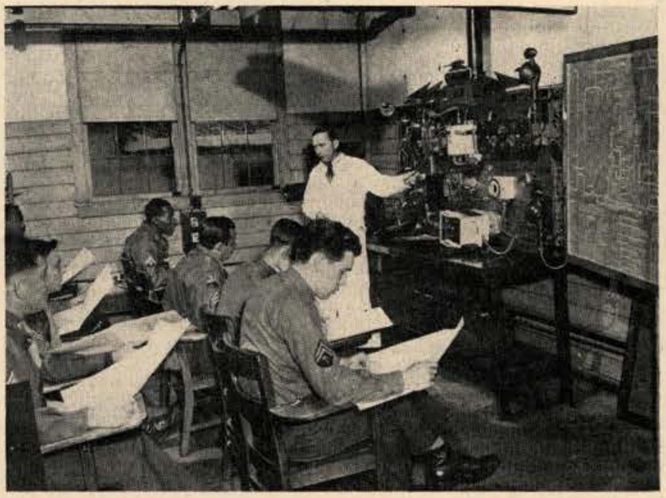
CLEAR OBJECTIVES

Another aspect of Army instruction, which is recognized as one of its strengths, is the fact that military training is characterized by realistic aims and clear objectives. In one report made by 300 civilian educators, 258 were in agreement on these characteristics of armed forces instruction as compared to civilian schools: clarity of aims, elimination of the nonessential, achievement testing, learning through performance, and better aids. They also pointed out that (this, however, caused discussion in the group—after all, it's hard to get agreement among experts) the Army had better discipline, excellent short intensive courses, more in-service training of teachers, and better supervisory programs.

In Army training programs a careful analysis is made of the various military duties to determine the needs of the soldier. Instruction which will supply these needs is then presented. The emphasis which is placed upon clear objectives and realistic aims in Army instruction is well demonstrated by General Jacob L. Devers' statement of training policy. He says: "Our responsibility demands our continuing effort to:

"a. Determine what is essential to each soldier in the following fields:

TELLING!



"(1) Knowledge.
"(2) Skills.
"(3) Physical condition.
"(4) Disciplined habits.
"(5) Convictions.
"(6) Will to fight.

"b. Improve our training methods and save training time without lowering our standards.

"c. Determine the basic requirements for unit combat proficiency and the most expeditious and efficient methods of achieving that goal.

"d. Carry out our training programs in peace and war with energy and with a feeling of personal responsibility for our men, our methods, and our goal."

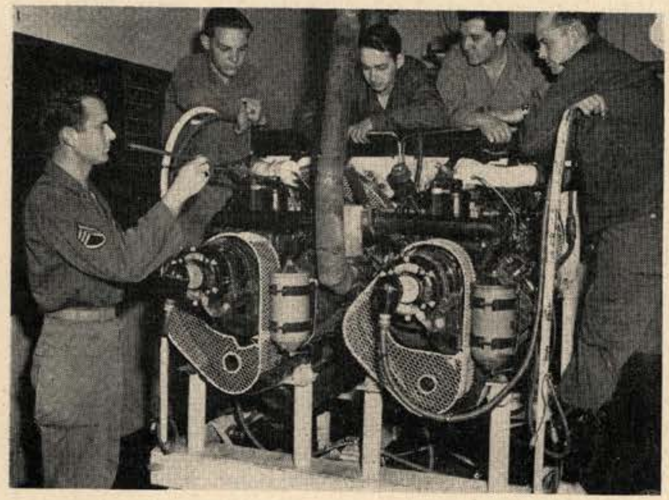
Revisions are constant because of the continuous evaluation of needs by the commanders. There is little feeling of sanctity for the traditional. Each course of instruction must justify itself by proving that it is needed by the trained soldier. Materials are included only if they have a direct and significant relationship to the objective. The commander who sets up a course of instruction has a clear concept of what the trained soldier, or end product, will be.

This emphasis on realistic aims and clear objectives is carried into the classroom by the instructor. He is constantly striving to motivate his men by setting specific objectives. In each unit of instruction the objective of the lesson and reasons for its presentation are emphasized. Clear objectives lead to practical programs and better instruction in the Army.

TRAINING AIDS

The Army officer can better appreciate military training aids when he realizes that his effective use of such expedients has caused an increased use of visual aids in our colleges and universities. A survey of 21 representative institutions of higher learning in various parts of the country, conducted by *The New York Times* after the war, pointed out that every one of the colleges and universities studied indicated that, partly because of the Army experience, greater use would be made of charts, graphs, motion pictures, and other visual aids. The University of Chicago revealed that it would intensify its efforts to improve the motion picture medium. Indiana is rapidly building its visual aids department and expects greater use of visual materials on secondary and college levels of education. While the use of many forms of visual aids had been a practice at these schools, the elaborate training aids used by the Army stimulated a desire for improved materials. Cornell expressed a desire that service charts be made continually available. Colgate plans more extensive use of those types of training aids which are used in military training. Nearly every faculty member is learning to operate a motion-picture projector. The experiences of these schools are representative of the influences which military instructional techniques are exerting in postwar education.

SHOWING!



At The Armored School training aids are considered so essential to instruction that presentations which do not employ such aids are considered inadequate. Many types of training aids are used to shorten the time necessary to gain an understanding of the subject, to clarify and emphasize points which would be difficult or impossible to get across by oral presentation alone, and to present subject matter which would otherwise be impossible in the classroom. The large models, mock-ups, and terrain tables help to vitalize instruction by adding variety as well as serving to expedite learning. The classrooms are designed so that large charts, models, motion pictures, and other projected aids can be readily employed in the instructional process; few colleges or universities can compete with our service schools in this aspect of the school plant. Instructors are trained in the development and use of training aids and special training facilities.

The important place of training aids in instruction is recognized by Army commanders. In his observations as a combat commander Brigadier General Bruce C. Clarke made this comment: "We finished the war with enormous progress in the development of training aids. At the start of mobilization we had very few. This important means of saving time and improving training should receive constant attention in time of peace in order that we will have immediately available, in case of mobilization, training aids, or plans for the production of training aids, of all kinds. A division training aids section and shop should be set up at once. We must train a division in much less than a year next time."

This realization on the part of our military leaders, that our man power must be trained more rapidly in the next war, places new importance on the Army's instructional methods. Before the Army officer can *fight* he must *instruct*. He can approach his instructional task with confidence when he realizes that his methods and techniques have been recognized as outstanding by the experts. The characteristics which have made Army instruction superior and which will enable the Army to INSTRUCT men for any emergency are:

*I*nstructor Training
*N*ew Techniques
*S*election of Men
*T*ests
*R*ealistic Application
*U*tilitarian Materials
*C*lear Objectives
*T*raining Aids

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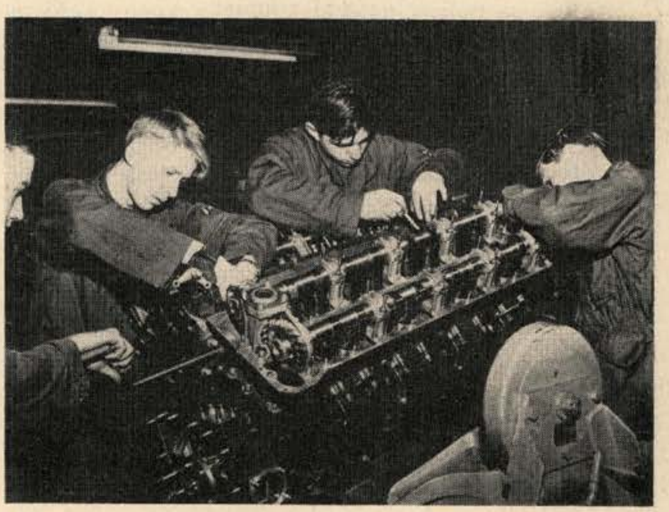
DOING!



RECONNOITERING

FOR some time now we've had the idea that we'd like to approach you along a more personal line, using an informal medium to share with you some of the stories that make Journal background—thereby placing us—the staff—on a more intimate footing with you—the reader. This page is our area of advance. Our title may or may not be good. It seems to be the best of several considered.

We can put such a page as this to a variety of uses. We'll pass along items of information of a general interest. We'll elaborate on some of the phases of publishing and general business about which many of you, through your letters, indicate a lack of familiarity and a lack of appreciation. We may gently chide some of you for the extreme attitudes you express on a variety of subjects. It is not impossible that we will occasionally take ourselves to task. But primarily, because of the close association of an editorial staff to its readers—because of our close relation to the members of our association, our branch, our army—we feel we have a responsibility for supplying some general intelligence that will put us in closer touch. For example. . . .

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THE STAFF has completely turned over. With this issue of the Journal you have a new Editor. You have also a new Circulation Manager and a new Business Secretary. The Associate Editor is only three issues young. The questions that come to mind concerning the effect such a change may have on policy, general content and format might well be answered in a review by you of the magazine. Certainly your personal interest and sincere criticism on a continuing basis are as desirable as they are necessary to the setting of a standard. Comment from the many fronts will get a careful consideration here in the home office.

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ELSEWHERE in this issue you will read an article by Mr. Max Sherover of the Linguaphone Institute marking the first gun in a campaign by the Armored Cavalry Journal to encourage the study of foreign languages. Mr. Sherover has had considerable space devoted to his activity in recent issues of *Time, American* and other periodicals, with emphasis being given to his rather astonishing discovery that languages, and in fact any other type of learning not requiring the exercise of reason, can be acquired while the student is asleep!

We were so intrigued by the possibilities of a system promising the painless absorption of, say, the Morse code, that we dropped in on Mr. Sherover the other day at his offices in Rockefeller Center. We found him a very dynamic personality, a thoroughly interesting conversationalist and completely sold on his idea of "learning while you sleep." At the same time he realizes that, like us, people are inclined to be skeptical.

We could not understand—and said so—what happens to the poor dope who leans towards insomnia. Doesn't he have to fall back on the archaic and irritating textbook?

"Insomnia?" says Mr. Sherover. All the better. He pointed invitingly to a large divan piled deep with sponge rubber cushions.

Being at the time in the throes of a Number Two hangover resulting from over-attending the 11th Armored Division convention, we gratefully assumed the prone position. A small ivory disk, connected electrically to a radio-like box, was gently pushed under the pillow. Buttons and knobs were pushed and twirled. In a moment the soothing lullaby of a string orchestra seeped up through the folds of the sponge cushions. We definitely drowsed. But before succumbing to actual sleep the music faded, giving way to a quiet but firm voice which, with superb diction, began to describe "la famille Durand." Grandmere Durand, it seemed, was seated in la chaise. Le petit fils of M. Durand was playing with le petit chien. And so it went until sleep became a fact.

Whether all this was due to the 11th Armored Division convention or not we cannot say. But for two days the situation regarding la famille Durand has been haunting us. We have been promoted into a French course and converted to the learn-while-you-sleep idea. We shall give out more on the subject in our next issue for we feel sure that the tremendous possibilities involved will be as fascinating to you as to us.

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IN looking over General Byers' article on Airborne Armor one is struck by the growing similarity of the carry problem as it affects both Airborne and Amphibious troops. The tank designers no sooner put an extra hundred pounds of armor on a vehicle, or add an inch or two here and there to the bulk, than it becomes necessary to leave that particular vehicle behind.

Next month we expect to present a very carefully prepared analysis of what the tank of the future should be like and how we should organize it within the Armored Division. The author has some very good arguments which if accepted should go far to eliminate or reduce the troubles which the Airborne and the Amphibians are now wrestling with. The Journal is not publishing the article to advocate the views contained in it but simply to carry out its mission of thought stimulation among officers and men who *should* be thinking about those things even if they aren't. This is mentioned to forestall any letters which might complain that authors are deviating from the Pentagon party line.

Going back to General Byers, it is heartening to see that he is approaching his problems in his well-known practical way. There are no Buck Rogers solutions presented. He is telling us that airborne units have some tough knots to cut and that in many respects things, such as the control system, are much like what Armor had to work with before World War II. With the systematic approach implied in his article we feel that it won't be long before an M-26 and the Daring Young Man have a lot in common.

POST EXCHANGE

Here is the place for you to express your ideas. Let us hear from you!

In Favor

IN response to your request for comment on Major Walson's article "Should the Armored Division Associations be abolished?" I am writing to back him 100%. If the avowed purpose of any of these associations is to serve the ex-division members by fomenting rivalry, maintaining unit *esprit,* facilitating the re-fighting of World War II, or affording an excuse for an annual drinking bout by a small minority, perhaps someone else can cook up a valid excuse for their existence. Granting that most of them are serving their purpose for those members who have separated from the service and no harm has been done to these. But immeasurable harm is accruing to those members who remain in active service and who actively participate in their division associations. A few of these are older men with long service who haven't much to look forward to and must content themselves with boasting of their past exploits and flattering their ego with ever-increasing magnification of their accomplishments. But the vast majority are young men who have their active service in front of them who should retain open minds and seek new horizons. For these people to adopt a know-it-all attitude and accept World War II as the ultimate in warfare, or for them to accept branch consciousness as an integral part of our army, is to court disaster and to handicap terribly our leadership of tomorrow. Talk with any of these youngsters who have been exposed to the insidious atmosphere of one of these associations and they will tell you straight-faced that such and such an armored division won the war. Joking? No, they have had their viewpoint so narrowed and their sense of perspective so shortened as to believe this absolutely, although the majority will be munificent enough to admit that some other division was almost as good and also played an important part.

The object of a worth-while military association should be to project constructive military thought into the future, to foment a spirit of teamwork and interservice cooperation, and to augment the focusing of our plans and efforts on our single purpose and our sole reason for existence. With this in mind, it becomes apparent that Major Walson stopped a step too soon. The path has been cleared for that final step by the U. S. Infantry Association.* (It) proposes a consolidation . . . into one service journal that will give us the best features of all our present service journals. . . . For many months it has been necessary . . . to keep abreast of trends and developments by subscribing to one or more journals in addition to that of one's basic branch. Think what it will mean to be able to insure that all of our military minds are thinking along the same lines, all imbued with the necessity for true unification.

It is with the greatest sincerity that I express my hope that the U.S. Armored Cavalry Association will see eye-to-eye with the U.S. Infantry Association, that the two will join hands and lead the way together to the formation of an invincible fighting team.

Lt. Col., Cavalry.

*(*See the Editorial Page—Ed.*)

* * *

Opposed

THE recent article regarding the proposed consolidation of the Infantry, Armored Cavalry, Field Artillery and Coast Artillery Associations, together with their respective *Journals,* was read with interest. In response to your invitation, I now desire to state my views.

Although made on a tentative basis, the initial approach impressed me rather unfavorably. I take a dim view of the Infantry Association's obvious desire to perpetuate the identity of their own arm to the exclusion of ours, through the designation "Army and Infantry Association of the United States." The differentiation in the planned size of lettering of the INFANTRY JOURNAL and other identifications that would appear below it appear to me as inequitable also. However, I am in complete agreement with the Armored Cavalry Association's contention that the identities and separate interests of the four arms should be uniformly subordinated to the purpose of achieving army unification.

The stipulation "initial representation" also produces a cold reaction. I am glad that our association takes definite exception to this, too. It is interesting to speculate on the probable response of the late General Patton had he been one of the general officers in the group approached "informally."

From surface appearances this maneuver seems to fit into the general pattern of current policy indicative of a desire to eliminate certain distinctions, traditional and otherwise, which have heretofore characterized our cavalry units. The current effort to change cavalry troop unit designations seems rather puerile in view of the fact that their retention could certainly occasion no loss of combat efficiency. Simplification, if that is the objective, could be the only justification. If a trend thus being manifested is not countered, I look for future TO&E's to read, for example, "Co, How, Inf (105mm)," instead of "Btry, FA, 105mm How" or, if we are all considered to be in Infantry by that time, with the term Infantry simply omitted as being understood.

As a cavalry reserve officer, proud of the distinction of being one, I hope that this thinly disguised elimination process will be vigorously resisted by our organization, through all of the facilities at its disposal, so that "regrettably, our participation not having been achieved," we can continue to publish our own journal, with the assurance that the articles selected for publication will be consistent with the preferences and professional interests of those of us who continue to serve in the arm of our choice.

John F. Graham, Maj., Cav. Res.

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Schools, Soldiers, and Stars

CAREER MANAGEMENT, with its Stairway to Stars, may seem to be the acme of logic to the unbiased and unconcerned spectator, but in the eyes of a large group of Career Managees it suffers from a grave and glaring deficiency. Those of us who speak from behind the eight ball, who constitute the fifty per cent not destined to attend the Command and General Staff College, the ninety per cent who will not attend the Armed Forces Staff College, and the ninety-five per cent never to see the inside of either the Industrial College of the Armed Forces or the National War College as students, feel that the Army school system, as related to Career Management, is designed not to train officers but to eliminate them. How else can we explain the inability of the school system to offer continued training to all of us, the indifference of the Army schools to the officer who has completed his Branch Advanced Course?

The obvious answer to those who claim that the elements of course-length and plant capacity are the determining factors in the present program is to point to the wartime short courses, which required a rather high degree of concentration of effort throughout, as contrasted with the present long courses, offering somewhat less of a strain. The elimination of the short course, in short, represents our elimination from the Army educational scene.

How to get back to school, how to climb higher on the Stairway, so that at least we rise as high as the leaves, if not the stars? Why not require a periodic return to our Branch School, for a quick and intensive course in recent developments—four to six weeks of schooling every three to five years? Certainly there are and will continue to be developments of importance in tactics and technique, in logistics and administration. And in between schools, require the continuance of education through extension courses. Finally, whenever possible, send officers to Associate Advanced Courses of other branches.

The school program should not be a bottleneck in Career Management, but rather an aid in Career Maintenance. It should add a military *elixir vitae* to the forgotten fifty, to the neglected ninety, to every officer who is an honest soldier. It should be based on an expanded Branch School interest in the officer, resulting in expanded interest on the part of the officer.

James E. Tyler, Lt. Col., Cav.

SOME COMMENTS ON AMPHIBIOUS OPERATIONS

by Major Michael P. Ryan

"to stimulate interest in, provoke thought on, and provide a free forum for the decorous discussion of military affairs."

(From the JOURNAL Masthead)

THE very instructive article of Brigadier General D. A. D. Ogden in the ARMORED CAVALRY JOURNAL of March-April, 1948, entitled "Amphibious Operations," ended with the following statement:

"In the postwar Army there is now a conflict between the Army's amphibious technique and that used by the Navy-Marines. The Navy wants and perhaps should teach amphibious technique but they want to teach it the way it is done by the Marine Corps. In other words, they want to change the Army's organization so it would have the same relationship to the Navy that the Marines have. They want to ignore 65 per cent of the Army's strength and make no use of it, or else they don't know what they are doing. The experience of six divisions wants to outvote the 89; the experience of 18 successful amphibious operations wants to outweigh the 49. The reconcilement of these two basic concepts is one of the first problems which arises with the consolidation of the services. Obviously, it is a task which needs doing."

The contents of the article indicated that the General received some erroneous impressions from amphibious operations in which he has participated or has studied. It is surprising to find serious consideration given to the concept that there are or have been two different systems employed in the beach assault by American forces. Upon considering the General's article, two Marine graduates of the Command and General Staff College (Fort Leavenworth) of the class of 1947 state that the ship-to-shore movement as taught at that school coincides in substance with what is taught in the Marine Corps Schools, minor differences due to variation in T/O's being the only differences noted.

Differences in organization of some logistical units may be found, but not in techniques. If you compare the Army and Navy logistical organizations that operate in ports of embarkation and in the ports in the communication zone you may find major differences in organization. I am sure that the readers of the ARMORED CAVALRY JOURNAL will agree that the techniques of employing permanent logistical agencies that operate in port areas should not be considered in the same light as those utilized in the organization and employment of the temporary logistical units that operate along the beaches in an amphibious operation.

It is surprising that one would say that the doctrine and techniques of amphibious operations as taught by the Navy are wrong for the United States Army. If such is the case, then the doctrine and techniques will most certainly have to be changed. Amphibious operations are not something to be handled by a closed corporation, for the landing force may be composed of Marines or of Army troops, and the techniques employed should be basically the same in each case. That

Major Michael P. Ryan entered upon active duty with the Marines in 1940. His wartime experience consists of service as Platoon Leader with the 6th Marines, 1st Provisional Marine Brigade, in Iceland, for the period 1941-1942. From there Major Ryan went on to the Central and Southwest Pacific Campaigns including Guadalcanal, Tarawa, Saipan and Tinian, where he served as Rifle Company Commander and Battalion Executive Officer. Since the war he has been an instructor in the Amphibious Warfare School, Junior Course.

the techniques are the same is to be seen by a look at amphibious operations as conducted by American forces.

The Joint Chiefs of Staff or a theater commander decide to seize a certain area. Let us suppose that this area is so located that a combined force is necessary and it is to be an amphibious operation. The theater commander will have the necessary forces assigned to him to carry out the mission. The force will consist of naval forces and landing troops supported by air force units. The landing force may consist of Army troops or a combination of Army and Marines if the area is large, or if the operation is actually the beginning of a continental invasion. It may consist entirely of Marines if the area is small and the campaign is naval in character.

It is not true that the Navy will always be allowed to make the decision to use their organic landing forces (Marines) to accomplish their primary mission; that is, to seize and defend advance naval bases. Navy-Marine operations may be launched not solely to further the naval mission but also to seize a base to further primarily an air force mission or to further an Army mission. Example, Iwo Jima; seized by Navy and Marines, although it was used primarily to further the air force operations against Japan. Whether the Marine landing force will seize an area for an advanced naval base to further a naval mission, an air base to assist the air force mission, or to make a subsidiary landing to further an army combat mission (Anzio type) will be decided by the theater commander or the Joint Chiefs of Staff.

Any landing, whatever the area to be seized is to be used for, will be governed by the same general principles regardless of the troops that make up the landing force. They may be and have been in the past, Army, Army-Marines, or Marines. The first of these general principles is that there be a unified command. There have been some advocates of a supreme commander, with three coequal assistants, one naval, one air, and one ground. That is fine on theater level where planning is strategic, but landing operations are tactical in nature. Therefore, the over-all commander should be lifted entirely out of the referee class. He should be charged with applying the combined force at the landing area in such a manner as to carry out the mission assigned rather than settling the differences between three coequal commanders.

Where the operation is to cross a considerable expanse of water the initial operations are primarily naval in character. Here a naval officer will be in command of the combined force. This naval officer will have direct command over the naval elements of the attack force or forces and in addition he will command the landing force in all matters pertaining to joint planning, embarkation, transportation overseas, ship-to-shore movement and support of subsequent operations. Notice that this authority does not extend over the tactical activities of the landing force units ashore. Just when this naval commander will relinquish the responsibility for the coordinate employment of the combined force will be prescribed by the authority that dispatched the force, either the theater commander or the Joint Chiefs of Staff.

If the operation is to be more or less a shore-to-shore operation where the distance is not great enough to give the operation a primary naval character, it might be that the theater commander would assign an Army officer to command the combined force.

The General's article placed great stress on the real and supposed differences in the organization of logistical units that support Army-Navy landings as compared to those employed in Marine-Navy operations. The greatest emphasis was placed on the differences of operation and organization of those logistical elements that are employed in the port areas after the amphibious phases are over.

Let us compare the two systems by starting with the logistical organizations that are employed by a landing force in the initial operations. In all landings, be they executed by Army or Marines, the landing force commander is responsible for the handling of supplies over the beach. General Ogden was mistaken when he intimated that the Navy assumes responsibility for that task in the case of Marine landings.

From the time that the landing is initiated the landing force must have an organization that is capable of performing the task of transferring the supplies from the boats to beach dumps where the logistical agencies of the combat units will pick them up.

This organization will require personnel to unload cargo from the ships and personnel and equipment on the beach for the unloading and handling of supplies. Where will the personnel and equipment come from? It is obvious that the combat troops cannot furnish them; they are occupied in extending and developing the beachhead. Nor can the normal logistical agencies perform this function, as they must institute normal supply operations prior to completion of unloading. A special organization is required. This agency is called the "shore party."

The shore party is a military-naval organization designed and equipped for handling landing force matériel across beaches, the control of traffic and supplies in the beach area and waters adjacent to the beach, and evacuation of casualties during the ship-to-shore phases of an amphibious operation. It is commanded by an officer of the landing force.

How is the shore party organized in an operation where the landing force is composed of Army troops? This was well described in General Ogden's article. For each corps in the operation an Engineer Special Brigade will furnish this support. This brigade is capable of forming three regimental task groups, each of which will handle the logistical support for one division in the beach areas. As the divisions move inland and the Engineer Special Brigade headquarters can land, it assumes control of shore party work on all beaches.

This Engineer Special Brigade and its subordinate regiments will be reinforced by naval elements charged with such operations as hydrographic reconnaissance, underwater demolitions in the beach area, and beach salvage and repair. This naval element is a part of the shore party and will operate under the control of the commander of the Engineer Special Brigade. The organic elements of the Engineer Special Brigade are not capable of handling cargo. This is done by augmentation personnel such as port companies, quartermaster railhead or service companies or by depot companies.

Just how different is this from the technique employed by the Marines? In each Marine Division we have an organic shore party regiment. The mission of this regiment is to provide the essential elements of command, control, and service operations for the military component of the division shore party. This regiment has sufficient motor transport, heavy equipment such as cranes, graders, and communications facilities to enable it to carry out its mission of transporting supplies, building beach roads, and beach dumps, establishing beach communications, etc. The regiment does not have sufficient labor personnel to conduct the unloading of boats at the beach. The labor details will be provided by augmentation personnel from outside the division when the division is sent on an operation, often by utilization of replacement drafts sent to the target with the assault.

The naval component of the division shore party is provided by the beach party battalion. This battalion consists of naval personnel and equipment that operate under the control of the shore party commander. This unit conducts such operations as hydrographic reconnaissance, underwater demolitions in the beach area, beach salvage and repair, and initial harbor development.

In a corps operation conducted by Marines, a corps shore party will be formed. The corps shore party headquarters will consist principally of personnel and equipment that will control, coordinate, and support the activities of the various shore party regiments. As each division comes ashore it is supported by its own shore party regiment operating initially under its own control. As soon as possible corps shore party headquarters lands and assumes control of the beaches and the activities of the division shore parties. The divisions are then relieved of the responsibility of shore party operations.

If the area to be seized is to be an advanced naval base, a Naval Construction Battalion (Seabees) or a Cub (a series of Naval components necessary to establish a small advanced naval base) might accompany the landing force to the target area in order that construction of airfields or port facilities might commence at the earliest possible time. It is quite obvious that it would be foolish not to use these elements and their equipment along the beaches initially if they can be profitably employed. The impression that the Cubs and Seabees are designed primarily for shore party work is erroneous. Many Marine shore parties in the past have operated without their assistance, although these units were often assigned to shore parties for initial duty.

It is realized that no two beaches will be the same. Due to obstacles, terrain, or other physical difficulties, as well as troops and equipment available, the shore party organization must be flexible. In other words, its organization must be such that it can adapt itself to the situation and the terrain rather than fit a stereotyped organization to every beach. The organization the Marines employ is flexible enough to cope with any situation that might arise. It is not surprising or coincidental that the Army uses generally the same shore party organization in their operations.

From General Ogden's article—"If the (Army) assault is on a limited objective the shore party consisting of the Engineer Special Brigade is the only logistic agency to operate here. If, however, the logistic agency is to operate for a long time or be built up to much more than its D-Day proportions, its work will be taken over by the Army Service Command."

Let it be pointed out that a landing by Marines alone will be limited in nature. It will compare to that Army landing in which the only logistic support agency will be the Engineer Special Brigade. If the landing is to be made by forces of greater than Corps size, then, in all probability, the landing element will be commanded by the Army general in command of the field army involved. There may be Marine units in the field army. (Example: The landing of the Tenth Army on Okinawa in which three of the seven divisions involved were Marine Corps.) After the beachhead has been secured and the action moves inland the combat actions are no longer amphibious and the Army logistical agencies will render their support in a conventional manner, although they may be forced in the less sparsely settled areas of the world to operate without the benefit of an established port.

In comparing the shore party systems employed in Army-Navy and Marine-Navy operations, we find they are fundamentally the same. After all, they both developed from techniques worked out prior to and during the war, where the experiences of all divisions, Marine and Army, were studied to arrive at the best system.

One of the major differences in the organization of the two shore parties is in the units that supply the beach labor. A field army going ashore on a large land mass has many logistical organizations available for use on the beaches that will not be present in a strictly Marine landing. Example: quartermaster railhead or service companies will be available for beach labor. The boat elements in some Engineer Special Brigades may be pointed out as a major difference in organization of the two shore parties. It is true that Engineer Special Brigades may have organic boat units if, for any reason, these units cannot be furnished by the Navy. The same will be true of Marine units if they ever get in a position where the Navy is unable to furnish boat crews. In this respect a quotation from General Eisenhower's testimony given in the hearings before the Committee on Expenditures of the 80th Congress on 7 May, 1947, is in order:

"The Navy had no men to train as crews for these small landing boats and the Army had to do it. General Somervell undertook and did provide engineering brigades to man these boats. It took a long time before we could transfer them to the Navy. They did not logically belong to us."

The Engineer Special Brigade, described in General Ogden's article, compares both in equipment and duties to a Marine shore party. As was pointed out, it forms the shore party for the landing when the landing is conducted by Army troops. Like this Engineer Special Brigade, a Marine shore party is "a combat organization specializing in the rapid establishment of logistic support under fire. It is the spearhead of the fixed logistic organization which must ultimately succeed it."

The regimental task groups of the Engineer Special Brigade, each of which is capable of supporting a combat division, compare to Marine shore party regiments which support Marine divisions. Just as does the Army landing force, the Marines stevedore ships, unload cargo on the beach, build beach roads, and establish beach dumps.

The statement that other units have "better control over cargo and a more flexible operation" is impossible to accept. Having had the opportunity of observing both forces in action, I know that statement is an exaggeration. If the observation that the "Navy-Marine organization tends to pile cargo in the dump indiscriminately" is based on actual observation, that observation failed to take into account the other factors that were influencing the unloading. In some landings orders from higher authority, enemy situation, or breakdown of equipment forced the unsystematic unloading of supplies for a temporary period. This happened in both Marine and Army landings, but it certainly doesn't mean that it is habitual in either case, nor does it establish a principle.

Now let us consider the subject of resupply shipping and the port activities after the combat actions move inland. Resupply shipping will arrive off the beaches and be handled by the shore party for some time after the operations commence. The activities and command relationships of the shore party with the naval elements will not be changed merely by the arrival of this shipping.

Let us suppose that Marine actions move far enough inland so that the activities of the shore party are superseded by logistical agencies operating from an established port. It is reasonable to assume that a landing of this magnitude will be made in support of an Army mission and the Marine landing force will depend on Army services for support.

As to the command relationships between the Navy and the logistical units of the Army operating in the ports along the coast line, if these ports are still in the combat zone, the field army commander or commanders will be in charge of the expeditionary force including these logistical units. The Navy will relinquish responsibility for the coordinate employment of the naval and landing force elements at the time prescribed by the authority that sent out the combined force. At this time the theater commander will prescribe the command relations between landing force, including these logistical agencies, and the Navy.

The cargo shipping arriving at the ports may include a large amount of civilian shipping carrying Army supplies. It is reasonable to assume that the force (Navy) charged with protecting this shipping from surface and subsurface attack and cooperating to protect it from air attack will have control over the movement of that shipping rather than the logistical units that will unload it. Any area along the coast might be considered a combat area as far as the Navy is concerned. To draw a rough parallel, the service units of the communication zone will not move arbitrarily into the combat zone and set up operation without being subject to the control of the field army commander in whose zone they want to operate.

After ground combat actions move away from the coast on which the landings have taken place, the land area will become a part of the communication zone. The command relations between the naval and army elements that operate in the various ports in this area will be prescribed by the theater commander in charge of all land, sea, and air forces in the area.

The responsibility for supplies, once they are ashore, lies with the landing force commander, Army or Marine, and he will use the organizations available in his service to carry out his responsibility. Both the Marines and the Army use the same general system in the establishment and operation of a shore party. If the Marines operate alone, then the shore party will usually be the only logistical agency involved. If they operate as part of a field army, then the Army logistical agencies will supply them after the initial shore party phase is over. These logistical agencies will be organized and equipped by the Army in a method best suited for their land operations.

If the statement "50 per cent or better of supporting troops found in the Army higher units have no parallel in a Marine force" refers to numbers, it is quite true. After all, Marines are not designed or equipped to operate as a field army and have always insisted that they do not want to duplicate uselessly services of the Army that they can and will have to use to support their operations whenever they are required to operate in furtherance of an Army mission.

That the Navy wants to change the Army organization is a misstatement and a misapprehension of the first water. It is not anticipated that an Army infantry division designed for overland operations should be saddled with an organic shore party regiment. For the initial stages of an amphibious operation this division will be supported by a regimental task group of the Engineer Special Brigade. The organization of an Army logistical unit that will support Army combat units after the shore party phase is over is something for the Army, not the Navy, to decide.

The reasoning behind the statement that the Navy could not extend medical service to 86 Army divisions without a very large increase in personnel is as difficult to understand as would be that of an equally true statement that the Army could not extend medical service to the fleets without a very large increase in personnel. Actually it is a misconception that the Marines have no medical service. Of course, they don't establish base hospitals, but they do have field medical units. Each division has an organic medical battalion. The personnel are Navy, but the doctors and corpsmen are just as much members of the division as Joe Blow Private in one of the battalions.

It is not necessary for them to establish larger medical services, for their wounded and sick can be and are evacuated to Navy hospitals afloat or ashore or Army hospitals if they are employed to further an Army mission. There is no desire to change the Army logistical organization for it has been tested and developed by actual combat. The Marines certainly don't want to ignore it for if the theater commander orders the Marines to land in furtherance of an Army mission they will depend upon them for a large part of their logistical support.

If anyone has an idea that the duties of logistical units of an amphibious force should be sharply delineated according to the service to which they belong, he should have been present at the planning for the Kikaga Operation, Phase 3D of the Iceberg Operation (Okinawa invasion). There the landing force composed of Marines as part of the U.S. Tenth Army were to be heavily supported by both Army and Navy service units, particularly in furtherance of the base development phase of the operation. This was and is necessary in amphibious operations of this size, for Navy services such as hospital ships, construction battalions, etc., will be available and will be able to supplement the activities of Army service units or to perform logistic functions that Army service units cannot perform until an adequate foothold ashore has been established. There will be no division of responsibility, for these service elements will operate under a single commander.

It is a radical departure from fact to assume that the Navy will put no one ashore to meet its own logistical needs. Naval forces can be fully mobile, but if an opportunity presents itself they will place service units ashore and operate from land bases in the area rather than depend entirely on vulnerable ship-borne services. Example: The naval activities in the Kerama Retto off Okinawa. The idea that the Navy "occupies the land solely to protect the fleet at anchor from land fire," is as ancient as the idea that naval combat consists solely of two fleets bearing down on each other in a column of battleships with victory going to whichever has the most fire power.

The statement that "the Navy's sole responsibility is to put him (landing force commander) successfully and safely ashore," should be amplified. The naval task groups of the attack force are charged with the following missions:

Provide air, surface, and subsurface reconnaissance prior to, during, and after the landing.

Embark, transport, land, and support the landing force.

Operate small craft required for the ship-to-shore movement and subsequent supporting operations.

Control the ship-to-shore movement in accordance with the approved tactical plan.

Protect against enemy surface, subsurface, and air attack, during subsequent operations in the objective area.

Control and coordinate air operations within the objective area.

Support the landing attack by naval gunfire, air operations, mining, and underwater demolitions.

Aside from the fact that in at least four of the General's list of Navy-Army operations the landing force consisted entirely of Marines or they formed a substantial portion of that force, the General's list ignores several other important points. First, that a good number of these operations were primarily shore-to-shore operations against lightly defended beaches. Second, that the six Marine divisions each made a number of landings launched over great water distances against determined opposition on most beach areas. Last, that a good number of the 86 Army divisions did not take part in any amphibious operations.

Regardless of these points, let's keep in mind that the amphibious technique of the United States has been tested not by six divisions versus 89, but by both Army and Marine divisions. The experience of 18 successful amphibious operations does not want to outweigh 49. I believe everyone will agree that it is about time we start thinking in terms of 95 divisions instead of 6 versus 89, and 67 successful landing operations rather than 18 trying to outweigh 49.

During a visit to the Camid Exercises the Journal staff did its best to get the Navy and Marines to say that they would like to have an armored division make the initial assault on a beachhead. To the Editors, there isn't much difference in landing on a beach and landing, say on the east bank of the Rhine. You have to start from scratch either way and in some ways it is easier to have only the enemy ahead than to have George Patton behind. But it seems that there is more to it than that—technical details which have to be considered and which lead those with experience to want to save the armor for its traditional role after the others have secured a foothold.

ATTENTION RESERVE AND GUARD INSTRUCTORS!

TANK COMMUNICATION TRAINERS

by Lieutenant Colonel Andrew J. Boyle

[The method of training described here might be readily adaptable to programs in Reserve and National Guard units which have access to posts, depots or dumps where such equipment might be available and could be arranged for.—EDITOR.]

THE Communication Department of The Armored School has utilized various types of tank trainers for initial instruction in the operation of tank radios and interphone systems. These trainers have usually consisted of some type of frame upon which radio and interphone equipment has been mounted. Seats have been installed so that the student could occupy the same relative position that he actually would inside a tank.

All of these trainers have had several fundamental disadvantages. First, they have not been realistic. Secondly, considerable personnel have been required before each class for installation and maintenance. Thirdly, in inclement weather it has been necessary to set them up indoors, and due to their bulk, this has constituted a major problem. Lastly, storage of the trainers, when they are not in use, has also posed a problem.

It was not until the idea was conceived of using some of the many tanks which the Ordnance Department has in storage that a satisfactory tank communication trainer was found. The basic idea was that since the Ordnance Department had numerous tanks in storage parks at Fort Knox, there seemed no good reason why these tanks could not be just as well stored in the Communication Department area and utilized for training purposes. This is exactly what has been done. Twenty tanks of the M4A3E8 type, mounting the 105mm howitzer, have been taken from the ordnance storage parks and emplaced in the Communication Department area. This type was selected because it is felt that it will be the last called for in case of any expansion of the army. The tanks are scattered throughout the area, with some 50 to 100 yards between individual tanks in order to eliminate any interference between adjacent radios. The tanks are placed on crushed rock standings, built up to form a pedestal of about 12 inches in height. Their appearance is attractive, and there is no doubt in anyone's mind when he is in the area that he is in The Armored School.

Since it is necessary to keep requirements for maintenance to the very minimum, each tank has been placed in indefinite storage by the Ordnance Department. The engines and howitzers have been sealed. The electrical systems have been disconnected from batteries, and all moving parts, as far as possible, have been locked in place. The breechblocks have been removed from the howitzers and stored separately. The interior of each tank has been painted white; and all finished metal parts, such as the finished portions of the breech, have been wrapped in waterproof tape. Thus, the inside of the tank has been made into a clean and pleasant little classroom.

Since the engines have been sealed, and since it is not desirable to operate the "Little Joe" generator, a means had to be devised for keeping the batteries charged. It was felt that provision should be made to provide for a maximum drain on the batteries resulting from eight hours of continuous operation of the SCR-508 and AN/GRC-3 sets. After numerous trials and experiments, completely satisfactory results were obtained by placing in each tank a Rectifier, RA36 (battery charger). The rectifier has been installed in the ammunition compartment in the right sponson. A 110-volt AC line has been run into each tank and terminated at a combination switch and fuse box. Under each tank has been driven a ground rod, and each tank is grounded. For the comfort of the students during extremely cold weather and for the care of the equipment during damp weather, a 1350-watt blower-type heater has been installed in each tank. The heaters have been placed low in the rear of the assistant driver's seat. Both the heaters and the rectifiers have been so installed that they are out of the way and cannot be damaged by students or other personnel within the tank.

Since in inclement weather it may be necessary to button up the tank, an electric light has been installed, assuring the student of a lighted place to work.

There is installed in each tank a speaker which operates off a public address system. With this setup, a class can be conducted by one senior instructor and the minimum of assistant instructors. To add realism, engine and battle noises are played at times over the public address system and piped into each tank.

It is felt that with this tank trainer the student is being taught the tank radio and interphone under more realistic conditions than heretofore. Moreover, it is believed the advantages of this training aid are being realized, and the disadvantages reduced to the minimum.

A ONE-DIMENSION FORCE?

History shows us the error of concentrating in one arm. Are we treading a similar path in this day of three-dimensional warfare?

by Theodore S. Hecht

WE are faced today with a new and remarkable theory of military strategy. Daily we are being importuned with facts and figures in an attempt to prove the existence of a new and comparatively inexpensive formula for the successful conduct of a future conflict. This formula is being presented as an almost perfect panacea for victory, an almost perfect method for securing the defense of these United States. If this theory is to be accepted at its face value, the future will see little need for an Army, and little need for a Navy. It will bring forth an era of glory and domination for our newest combat arm, the Air Force.

The theory as it is stated is fairly simple. Possessing the almost perfect weapon, the Atomic Bomb; about to possess the almost perfect method of attack, the guided missile; and protected by the almost perfect machine, the jet fighter; the Air Force need only mass its long-range bombers, destroy the enemy's atomic and industrial plants, and no conceivable foe can ever achieve victory over us. The function of the Army will be the protection of Air Force bases on land; that of the Navy, the protection of Air Force bases by sea; and the Marines, God help them, will probably be used to form honor guards for our future heroes of the sky.

But before we consent to buy such a formula, we may possibly wonder whether it is wise to magnify a single arm out of all proportion to the others. It might be well to inquire whether all this has ever been tried before, under other circumstances, in other eras, yet tried in the final testing ground of all theories, actual combat.

It is certain that the weapons in question are new. It is certain that the Air-Combat Arm has only recently reached its maturity. But it is equally certain that every weapon is equally startling to its contemporaries at the moment of its introduction, and that every arm of the military service seems equally devastating in its initial combat. In the record of history this may be noted many times. Drugged by the overwhelming ease with which the new arm crushes the unprepared defenses of an enemy waiting for a more standard attack, the older arms hesitate to mark the true limits of the newer services attack value. This is also true today. The three examples which will be presented will show what happened a long time ago. The critique of the Air Force position will attempt to show the flaws in the similar position of today. In those respects at least they may give us some indication of the odds of probability of success for our present day cure-all.

I. The Cavalry

Throughout the bulk of the middle ages, the man-at-arms, the basis for the feudal heavy cavalry, was the unquestioned master of warfare. He had triumphed over and over again, against the undisciplined and under-armed foot soldier. In such combats, i.e., Hastings, the Norman-Welsh Wars, or the Albigensian Crusade, the defending foot had little if any mounted help. But what had been overlooked was that the Cavalry had only encountered Infantry under the Cavalry's own best conditions, or in circumstances in which the Infantry itself had been of a very low grade. There was no occasion in which a good, trained Infantry force, or an Infantry-Cavalry force, had met a purely Cavalry organization—at least none that was widely known. All good armies were mounted armies. All of the military thinkers and strategists were horsemen.

But even more, birth was the basis for society and politics as well as war. The nobleman, son of a nobleman, was dedicated to the horse as the historic weapon of his caste. Since all the best people were cavalrymen, so it followed—just as surely as the sun travelled around the medieval world—that only Cavalry was capable of military victory.

The challenge finally came in the heart of Europe, right where nobody could miss it. It came about because sooner or later horsemen were bound to meet a group of foot soldiers in a place where men had no business going mounted. It came because Cavalry was being used out of all proportion to its proper function, and sooner or later its limits were bound to be discovered. The discovery was spectacular.

In 1315, the cantons of Uri, Schwyz and Unterwalden were causing trouble in their mountains. Their

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master, Duke Leopold of Hapsburg, resolved to punish them. In accordance with the fashion, he called out a part of his feudal levy, aroused his friends, and marched off armored, lanced, sworded and mounted into the rugged country of his intended victims.

The Swiss know what they were facing. They had no Cavalry or armor, but they made the best of what they did possess; pikes, esprit-de-corps, excellent discipline and terrain.

The forces met in a valley along the shores of a lake at Morgarten. The road followed the shore, approaching from a defile and exiting in another. Away from the lake the mountains rose moderately steeply. The exit was blocked by boulders. As Leopold debouched along the lake front the holocaust commenced. The mounted knights were greeted with a shower of stones and boulders. A rockslide was started to the rear. The knights halted. Then down the slopes came the organized pikemen, three battalions in echelon. The horsemen turned, reared and fell. Pushed by thrusting pikes, they were quickly forced backwards into the lake and drowned. It was a complete victory and an almost total annihilation. A few escaped, enough to spread the astonishing news. The Cavalry had been defeated. A panacea got its first panning. Followed by Crecy, Poitiers, Murat, Nancy, the infantry was reborn—no not reborn, just raised up again to its rightful place as an equal arm, an arm to be coordinated with Cavalry to form a stronger and more effective war machine.

II. The Infantry

The 15th century saw some of the greatest glory for the Infantry. The victories of the Swiss had startled the world. They had forced the Hapsburgs to sue for peace. They had trampled down the infant empire of Charles of Burgundy. They seemed unbeatable. Even their enemies copied them; the emperor Maximilian designed his Landsknecht force as an admitted imitation of his powerful foes. Their reputation fostered a great diplomatic rivalry for their alliance, culminating in the perpetual peace with France, which gave the Valois rulers of that kingdom the sole right to hire Swiss. But this alliance was of only passing benefit to France. The Swiss were exceedingly mercenary. They fought for plunder and for pay. Secure within their fortress of the Alps, they cold-bloodedly defied all treaties with impunity. They fought as they pleased, for whom they pleased, and only if their pay was prompt.

And yet the Swiss remained a power only because no really coordinated attack was made against them. While nations clamored for their services and ignored their own fighting forces, it was only necessary to coordinate the existing arms to quickly destroy this Infantry which treated with such derision its small supporting mounted arm. The first time that this was tried, the legend of invincibility was smashed. The year was 1515, the 200th anniversary of Morgarten. The place was Marignano, a small town in Italy. The countryside had been fought over for 20 years. All the actors were the same, but this time, for a change, the Swiss were opposing the French. Leading the French was the young king Francis I, a cavalryman and a true knight. But still he had an excellent train of Artillery. He was not deficient in Infantry. But most of all he was willing to experiment, and in experimenting he accidentally stumbled on coordination.

As the Swiss moved forward, Francis charged them at the head of a small group of horsemen. His companions followed suit. The Swiss halted to repel the Cavalry. They succeeded. But halted they were easy marks for the guns which cut great holes in the densely packed pikemen. The horsemen continued charging, the guns kept up their fire. The gaps got bigger. The French Infantry—Landsknechts of course—moved in and mopped up. The Swiss were overwhelmed. A coordinated attack had stopped the best representatives of a single arm. Another bugaboo bit the dust. The Infantry, as the Cavalry before it, would now become a part of and not the entire battle force.

III. The Engineers

For centuries the military builder had been an accepted necessity in war. With the renaissance, fortification reached such a peak that it became a military maxim that the only result of a battle victory was a freedom to choose one's siege.

The frightful plunderings of the 30 Years War only added to the interest in fortification. Almost proof against the cannon of the day, a source of vexation to the Infantry, a means of frustration to the Cavalry, the fortress gave the 17th century militarist a greater and greater inclination to relax within the barrier of his planned defense.

The Siegecraft of the day was as little coordinated as the warfare of the past. The defense depended primarily upon the engineers. The Infantry was strictly an auxiliary, used to defend the engineer at work and to interfere as much as possible with attempts to batter the outworks. Once a completely coordinated attack was made, the entire defensive strategy was sure to crumble. It did.

In 1673, Louis XIV was off on one of his numerous wars in the Low Countries. With him was the chief engineer of France, Vauban. He had constructed the magnificent fortresses that defended his native land, many of them still standing today. But his interest was universal. Unprejudiced in strategy, he was as keenly desirous of inventing a scientific attack as he was in constructing a scientific defense. He was ready with an innovation and anxious only to give his method a trial.

The selected town was Maastricht. It was one of the finest fortresses in all Europe. Years had been spent in building it. Some of the best brains of the period had planned it. Vauban set out to capture it.

The method of attack was simple. It was based on the ancient Roman idea of the movable base. The principal failure in Siegecraft had always been the distance of the reserve base from the actual operation, permitting small sally groups to destroy any unit approaching the walls. Vauban constructed a series of parallels along the approach route, each protecting a series of angled approach trenches. Thus the artillery could be advanced in comparative safety. The Infantry would have close exits toward the town, with close reserve support. Any sally from the fort would be met with a quick marshaling of strength. The Cavalry would cover the flanks and rear against relief. The result was decisive. Maastricht fell in a few weeks. Then Trier. Then forts by the dozen. And with each fort fell a cure-all. Another experiment in the exaltation of a single arm had failed.

THE MODERN PANACEA?

This glance at history provides an indication of the inevitable result of concentration in one arm. In a history-packed quarter-century, flanked by two world wars, we have erased the one-arm army and developed a balanced team whose effectiveness is inherent in the record of the late war. However, with the universal scope of three-dimensional war we have reached a more advanced danger—that of a one-service armed force. Technological progress has thrown the emphasis on the air arm.

The danger that exists today lies in the attention which our air arm may receive out of proportion with and at the expense of the ground and sea arms. Let us examine some of the points which seem to pull the picture out of focus and which point the way along the trail of history's mistakes.

1—They tell us that a 70-group force of tactical planes will provide us with a good measure of protection until we have a chance to rearm.

ANSWER—On December 7, 1941, the Air Force had activated a total of exactly 70 groups of tactical units. We were in the midst of a huge rearmament program, backed by the experience of more than two years of a world conflict. Yet we were so far from being prepared that we got a good kicking around in the Pacific Theater. We failed initially to meet the submarine menace in our continental waters. Our coasts were practically devoid of defensive planes. We had to wait 8 months before the first bombardment mission was mounted in the European Theater.

CONCLUSION—A 70-group force is only a cadre force, sufficient to allow for easy mobilization but too small to provide either initial offense or even a satisfactory defense.

2—Long-range bombardment we are told will provide a cheap and easy method to destroy the enemy and break his will to resist—especially when this bombardment is accomplished with Atom Bombs.

ANSWER—Psychological factors cannot be forecast with any degree of accuracy. Fanaticism is not easily broken. The Moslem warrior, and the Crusader who opposed him, died happily for his cause, secure in the certainty of his reward in his hereafter. As for bombardment with Atomic Weapons—there is a saturation point in any destruction. Berlin, Cologne, Darmstadt and even St. Lo were as completely destroyed as Hiroshima. Yet in each of these cases we still had to dig out a resisting enemy with guns and armor. Whenever there was no follow-up by ground attack after a bombardment, the people dug themselves out and rebuilt; witness the rebirth of Coventry.

CONCLUSION—Destruction cannot cause surrender unless there is an immediate threat of armed invasion or occupation in overwhelming force. Bombardment can daze and temporarily disintegrate, but it cannot permanently conquor.

3—They say that the best solution for future warfare is to be found in a series of heavily armed and protected airbases, each covered against airborne attack by heavy concentrations of ground troops. (A recent article in a popular national magazine put that figure at 200,000 troops for a single sample base.)

ANSWER—If the Air theory is correct, these concentrations will make an inviting target for any planned enemy air attack. We must credit the enemy with planes possessing a range and armament equal to our own. Thus our ground troops will be open to destruction from the air, preceding any attempted occupation of the base. If the enemy has superiority in the air to the degree necessary for Airborne attack, he also has a superiority sufficient to attack these troops directly with aircraft. Troops thus pinned down cannot be used elsewhere. If the Air theory is incorrect—these troops are certainly better employed elsewhere.

CONCLUSION—Regardless of whether the theory is correct or incorrect, heavy concentration of men in defensive deployment, restricted to the defense and given no opportunity for offense, is not sufficient to guarantee the safety of the Air Arm.

4—We are told that Atomic attack by Air Force bombers will make Naval Forces obsolete.

ANSWER—The Coral Sea and Midway battles seem to demonstrate that dive and torpedo bombers of more or less restricted range are far more effective than heavy bombers, in a naval action. While Bikini proved that near misses are as destructive as direct hits, a deployed fleet, scattered over a very large area, and under evasive movement will not be as amenable to atomic destruction as a closely concentrated fleet. Certainly new formations may be needed, but such formations will only increase the importance of carrier based aircraft. Such carriers will need battleships, cruisers and destroyers for surface protection. Should we fail to provide such surface protection, an enemy fleet might wipe out our sea communications, and such a loss of the sea would preclude any chance of effective overseas operations.

CONCLUSION—Naval force is necessary to maintain our overseas positions, our system of island bases, our communications with our friends, and to prevent enemy invasion. The Air Force has not negated these needs.

5—They tell us that fighter aircraft when combined with our Aircraft warning and communications system will make hazardous or almost impossible a concentrated *bombardment of the United States.*

ANSWER—Given the possibility that the enemy will be as efficient as we are, our own bombardment will be equally hazardous and improbable. If the aircraft warning systems are less efficient, so as to make bombardment feasible, then the only defense against enemy bombardment will be the occupation of his bases in order to deny him permanently of their use. Thus land action will be necessary. If we presume that the enemy will attempt to prevent us from occupying his bases, we must also presume that we must fight him. This means that we will need soldiers, a land army of all arms.

CONCLUSION—The only safe way to protect the United States against the protracted bombardment of an enemy, is the occupation by ground forces of all bases within range of the United States.

6—Aircraft and atomic weapons will make large troop concentrations impossible, thus making large armies impossible.

ANSWER—Troop size and troop deployment are two different things. The introduction of automatic weapons taught us that ten men in ten foxholes can deliver the same firepower as ten men firing volleys from ranks. We have also learned that while a small, efficient and highly equipped force can destroy a large, poorly equipped force, a large, efficient and highly equipped force will beat that small force. While it may be true that new formations and new deployments are needed, it is not true that we should therefore decrease our total firepower. Certainly we must at least defend bases, gain bases, and destroy enemy bases. We will probably have to fight an enemy army to do this. We will need a large army to fight successfully a large enemy army. The solution will be found in new forms of order. It might be added here that if our army in the process of defeating the enemy's army in order to aid in gaining bases, should also happen to win the war—the country would certainly not be unhappy about it.

CONCLUSION—The size of our ground combat force will be predicated upon the size of the enemy's ground combat force. The size of our ground service forces will depend upon the size of our combat force.

7—Ground weapons, ground matériel, and ground transport are outmoded. Only the Air Force is up-to-date.

ANSWER—This is evidently based upon a theory that ground weapons, matériel and transport will stand still while only Air weapons will develop. Granted that we need a new transport, better weapons, and newer types of matériel, why not develop them and manufacture them. Technological advance is not limited to a single form of endeavor, and it is silly to presuppose our fighting a next war with the last war's dispositions.

CONCLUSION—Initiative and invention are as necessary to the ground forces as to the Air Forces. There is no reason to suppose a completely inert ground force either for ourselves or for an enemy.

8—The Air Force is capable of winning the next war singlehanded.

ANSWER—This supposes that the Air Force will neither be destroyed nor even adequately opposed by the enemy. Certainly it suggests that the enemy will be sportsman enough to fight a war the way the Air Force wants and expects him to. It supposes that we bomb him until he surrenders. But suppose he doesn't surrender. It supposes that we can destroy his concentrations. But suppose he doesn't concentrate. It supposes that we can destroy his industry. But suppose he builds it underground or disperses it. It supposes that he will not coordinate. But suppose he does. It supposes that we will have a larger Air Force than he has. But suppose his is larger.

CONCLUSION—We cannot act in accordance with a theory that supposes a brainless enemy. We must be prepared for an enemy doing everything counter to our expectations. We must be prepared for the worst, not the best. We must be prepared for all eventualities.

GENERAL CONCLUSIONS

A ground combat army acting on the offensive, secured by an Air Force holding complete domination of the skies, can destroy an enemy force. Air bombardment backed by the immediate threat of invasion and occupation can be decisive. An Air Force is necessary, is indeed a vital element in warfare, but it is not the whole show. A coordinated Army, a coordinated Navy, a coordinated Air Force, all working together in an over-all coordination, is the only way to achieve an ultimate security. We have seen that this is so historically. We can see that this is so today. Let us therefore strive to achieve this balanced force rather than to hope for security through the glorification and magnification of a single arm. Let us hope that the United States will not be another of the disillusioned worshippers of the one-arm Army, another in the long list of victims of the military panacea.

Mistakes are lessons of wisdom. The past cannot be changed. The future is yet in your power.

Hugh White

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BOOK SECTION

MARSHAL BADOGLIO ON A CRITICAL PERIOD IN ITALY'S HISTORY

ITALY IN THE SECOND WORLD WAR. By Marshal Pietro Badoglio. Translated by Muriel Curry. Oxford University Press. $3.50.

A review by

CAPTAIN WILLIAM GARDNER BELL

Pietro Badoglio is certainly one of contemporary history's figures. He has been embroiled in a half century of wars, including history's two greatest. Before reviewing his latest work it might be well to review the man.

Born of peasant parents in Piedmont Province in 1871, Italy's future *Maresciallo* began his career in the Military Academy at Turin, graduating in 1890 as a sub-lieutenant of artillery. Five years later he was taking part in the East African Campaign. The Eritrean Campaign followed at the close of the century, and in the Libyan Campaign of 1911-1912 the up-and-coming officer was credited with a portion of the responsibility for the victory at Zanzur.

1915 and the First World War found Badoglio a lieutenant colonel with the Italian Second Army Corps. In the following year, as colonel, he became Chief of Staff of Sixth Army Corps in northeast Italy. The generalship resulted from his contribution to the capture of massive Monte Sabotino, which secured the victory at Gorizia.

S. C.

Marshal Pietro Badoglio

General Badoglio had just assumed command of the Italian Second Army when the Austro-German push hit the Italians at Caporetto in the drive that ran them out of the Julian Alps and back across the Venetian Plain to the Piave River. Badoglio was active in the organization of the defense on the Piave River line, and in the offensive that pushed the enemy back into the Alps.

Badoglio represented his country at the Venezia-Giulia Conference in 1919, and moved on to serve his country as Envoy to Rumania and the United States, Ambassador to Brazil, and Governor of Libya, interspersed with greater Army responsibility, appointment for life as Senator, and promotion to Marshal in 1925.

Meanwhile, in the fall of 1922 the Black Shirts had marched into Rome. Badoglio is reported to have begged for a battalion of *Carabinieri* (State Police) to "sweep away these Black Shirt upstarts." At any rate, Victor Emanuel chose to stand by, and the shoestring movement became firm. The Duce apparently thought the retention of Badoglio a wise political move. The Marshal remained on, for whatever reason. He might have resigned. It would have been much in his favor.

Marshal Badoglio is said to have opposed the Abyssinian War, which was later won under his leadership. It was perhaps at this point that Italy's stock in world eyes dropped to a new low as her superior forces fought those of Haile Selassie. With the successful close of this colonial war came the moment for Pietro Badoglio to write his first book, *The War in Abyssinia* (Putnam 1937).

In his foreword Marshal Badoglio wrote of that book: "It is dedicated to the Fascist Nation, that has understood and followed the course of the war with passion and faith, in perfect communion of spirit and of strength; that has given to the war, as always, its contribution of blood, and to the world, as never before, a vision of such endurance, of souls so ardent, of hearts so devoted alike to their country whose greatness is now enhanced, to their King, now become an Emperor, and to their Leader, whose hand guides them."

These words may be somewhat in the category of required cultivation of superior authority, but they also assist in background on estimating a man, a country and a period of history, as we prepare to look at things through the eyes of his latest book.

It is possible here to offer a most interesting transition by bridging with Badoglio's own words a history-packed eight years; words springing from two widely separated viewpoints. Closing his first book, *The War in Abyssinia,* on the triumph of successful leadership, Badoglio spoke thus: "Sustained by the lofty words which our beloved King and Emperor did not fail to address to us as a recompense for our labors, guided in every action by the Duce, we felt close to us the burning soul of the entire nation."

And so to the Preface of his new book, *Italy in the Second World War:* "I have written this book because I believe that the Italian people have the right to know the course of events which led to their ruin. I do not wish to try to justify myself. Only the man who acts makes mistakes."

This volume opens on a point of difference between Badoglio and the Duce; a difference over the state of readiness of Italy to enter a war which Mussolini felt inevitable, and

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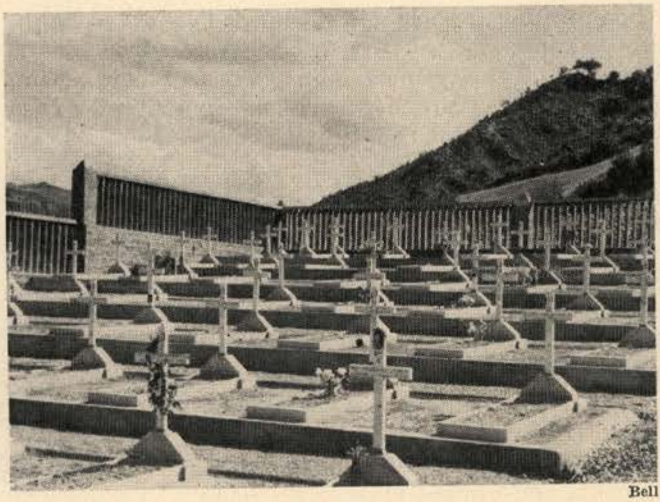
FROM THE BOOK DEPARTMENT

which he was most anxious to inaugurate in order that his fellow-dictator Hitler would not dominate the Axis scene. It is unfortunate that it could not have been a difference based on moral grounds. This leads to an exposition of the mutual dislike and political disunity between the Axis partners which could not have been realized by the Allies at the time—a disunity that Badoglio says was "perhaps transcended only among the Allies." He mentions a variety of points of severe contention as the war progressed, such as the decision of holding on at El Alamein, and the sending of Italy's crack *Alpini* Mountain troops to Russia, where, incidentally, many are thought to be still prisoners.

Equally absorbing with Axis relations is the story of Fascism's loss of favor with many of its supporters among the people, and the staging of the events that led to cobelligerency. The Marshal points out a number of instances in which the Allies failed to carry out promises set forth in the preliminary conditions on Italy's withdrawal from the war. Primarily he deplores the later limited exploitation of Italian forces, whose desire—and whose country's desire—(so he states) was to take a full combat role in assisting in the liberation of Italy from the Germans.

Italy's Army, Navy and Air Force made a number of substantial contributions to the war effort. Convoy duty by the Navy, supply of Partisan forces behind the enemy lines in Italy and the Balkans by the Air Force, and combat along-



Bell

Italian Cemetery at Castel Del Rio, high in the Apennines, where lie members of the Folgore Group who gave their lives fighting with the Allies.

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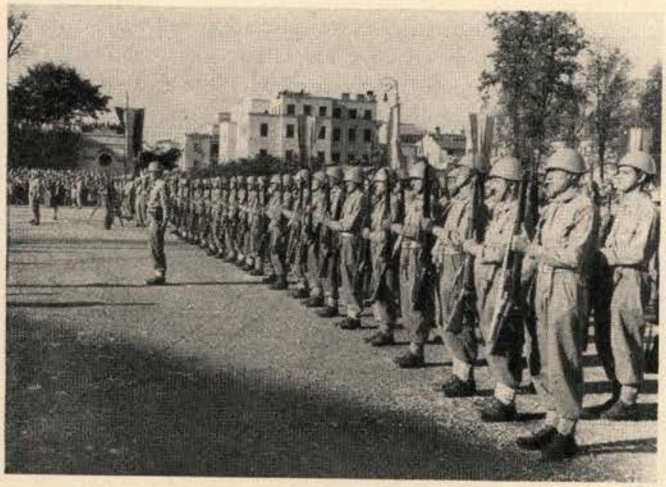
side Fifth and Eighth Army troops by the Army were but a part of the operations of Italian forces, which were desperately in need of redemption after laboring under the Peglerian stigma, so current in that period—of Italian troops advancing rapidly—to the rear!

For those of us among Allied units who may have fought alongside or accomplished a relief with a unit of the Folgore Group; or whose miserable Gothic Line existence was dependent upon supplies brought up at night over muddy, tortuous Apennine trails by the First or Twelfth Italian Mule Pack, there was ample opportunity to revise previous estimates.

Badoglio is not very kind to the Allied Control Council, nor in general to the Allied administration of the country, which he feels retarded rather than advanced the Italian Government's resumption of internal control. As early as 1944 he had his meeting with the differences among the Big Three, which are at their crux today. It is significant that this book, written in 1944, ends on a question in this vein.

Essentially the book has the air of apology for what the Marshal did not do and justification for what he did do. Militarily he stands up well right down the line. Politically he falls short. Whatever may be history's judgment of Pietro Badoglio, it may be said that his has been the life of a soldier. It is in the political field that he will be found wanting.



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A unit of the new Italian Army's Divisione Mantova. Italy's forces are limited by the Peace Treaty. Much of the clothing and equipment is from Allied sources.

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Fiction

Aug. 29	Sept. 5	Sept. 12	Sept. 19	
1	2	2	**1**	The Naked and the Dead. *Mailer*
2	1	1	**2**	Shannon's Way. *Cronin*
	11	6	**3**	Tomorrow Will Be Better. *Smith*
3	4	3	**4**	The Loved One. *Waugh*
5	3	4	**5**	The Heart of the Matter. *Greene*
4	5	5	**6**	Melissa. *Caldwell*
		11	**7**	Toward the Morning. *Allen*
8	9	13	**8**	The Plague. *Camus*
		16	**9**	Ape and Essence. *Huxley*
			10	The Cleft Rock. *Hobart*
9	8	7	**11**	Lace Curtain. *Berlin*
6	10	9	**12**	The Golden Hawk. *Yerby*
10	7	14	**13**	Woman With a Sword. *Noble*
12	12	15	**14**	A Candle for St. Jude. *Godden*
7	6	8	**15**	Pilgrim's Inn. *Goudge*
			16	One Clear Call. *Sinclair*

General

Aug. 29	Sept. 5	Sept. 12	Sept. 19	
2	2	2	**1**	How to Stop Worrying and Start Living.
3	3	3	**2**	Peace of Mind. *Liebman*
1	1	1	**3**	The Gathering Storm. *Churchill*
4	4	4	**4**	Sexual Behavior in the Human Male.
9	10	8	**5**	Westward Ha! *Perelman*
5	5	5	**6**	Malabar Farm. *Bromfield*
15	7	7	**7**	Road to Survival. *Vogt*
		14	**8**	Of Flight and Life. *Lindbergh*
7	6	11	**9**	Our Unknown Ex-President. *Lyons*
6	9	9	**10**	Civilization on Trial. *Toynbee*
12	13	10	**11**	A Guide to Confident Living. *Peale*
10	11	12	**12**	White House Diary. *Nesbit*
			13	John Goffe's Mill. *Woodbury*
8	8	6	**14**	The Stilwell Papers. *Stilwell*
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JOHN J. PERSHING, GENERAL OF THE ARMIES. By Frederick Palmer. Military Service Publishing Company. Price $4.50.

An excellent book, skillfully written by a distinguished author who is exceptionally well qualified to write about General Pershing. It was during the Russo-Japanese war of 1904-05, that the author, a war correspondent, and Captain Pershing, then a military attaché, began a friendship which continued until the time of General Pershing's death. The author was a member of General Pershing's staff in the first World War, and had many opportunities to gather firsthand information about men and events of that period. The book was completed, except for the last two chapters, and set in type in 1940. The last two chapters were the outgrowth of the author's occasional talks with General Pershing before and after Pearl Harbor.

The biographical material covering Pershing's career up to 1917, though colorful, is restricted to about one-fifth of the text. The author has Pershing meet Miss Frances Warren, marry her, and depart for Japan all in one short paragraph. Most of the book relates to General Pershing's activities as Commander in Chief of the American Expeditionary Forces.

Historical material pertaining to relations with our Allies is of absorbing interest. The strongly nationalistic views of Lloyd George, Clémenceau, Orlando, Haig, Foch and others, and their repeated efforts to absorb American manpower into their armies, to fight under their commanders, were matters which required constant attention from the American Commander in Chief. The sharp disagreements between our Allies, and the efforts of M. Clémenceau to have General Pershing replaced, are typical of many interesting episodes related. The author devotes too much space to the combat records of certain divisions, but this defect is far outweighed by the interest and value of the book as a whole.

This book is a fine tribute to the character and ability of a great soldier. It makes fascinating reading, particularly for those who served in France in the first World War and for their successors in World War II. For those who are to carry on the traditions of American combat leadership, this book is required reading.

COLONEL C. C. BENSON.

* * *

FOR WANT OF A NAIL. By Hawthorne Daniel. Whittlesey House. $3.75.

When in the first week of December, 1776, Washington wrote a letter to General Maxwell assigning him the task of securing or destroying all boats along the Delaware River in order to deny their use to the British in following up his crossing, he probably had little thought for the word *logistics*. In preventing the forces of Cornwallis from getting across the river, Washington effected what today would be a victory in logistics. He caught the British without any prepared means of effecting the crossing, and he placed in hand the means for recrossing his own army to surprise and beat the British at Trenton.

With this lesson Hawthorne Daniel introduces a series of six examples of the influence of logistics on war. Assembled under the title *For Want of a Nail,* this is a fresh approach to military history, and is in line with the increasing importance and consciousness of a phase of war which has been overshadowed by the more spectacular tactics, strategy and personalities.

As a corollary to the New Jersey Campaign, Daniel moves to the 1777 incursion from Canada of the British aimed at Albany and Boston; intentions which failed largely through the failure of the transport system of General Burgoyne —again primarily a logistical fault.

The author then progresses to the Peninsular Campaign in Spain and Portugal in the period 1808-1814, and here the British are shown to advantage in the extent of logistical preparation for this campaign, which, against the lesser consideration on the part of the French forces, gives Wellington the adjunct to strategical ability that wins him the war.

Daniel hardly goes so far as to suggest that logistics won or lost the campaigns of which he writes, but he does draw the logistical phases in their proper light as he explores the Moscow Campaign, the American Civil War, the Sudan Campaign, and the Invasion of Europe in the late war.

It seems obvious that our logistical consciousness has increased proportionately with technological progress. Wars have become all-embracing, and more than ever before the logistical aspect reaches into the heart of the countries engaged. Logistics have their hold on the peacetime nation, which must look into the future through the groundwork of preparedness. As General Brehon Somervell says in his foreword to Mr. Daniel's book, this is a subject "which may well be the key to our ability to perpetuate our way of life."

W. G. B.

* * *

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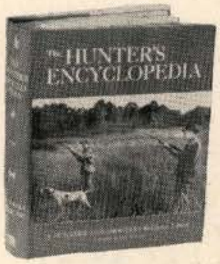

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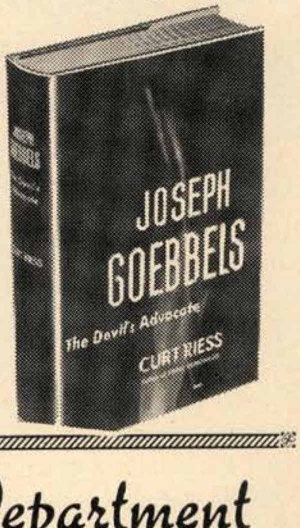

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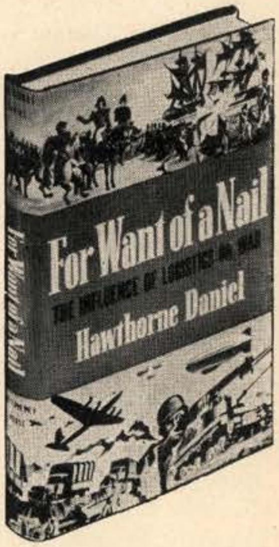

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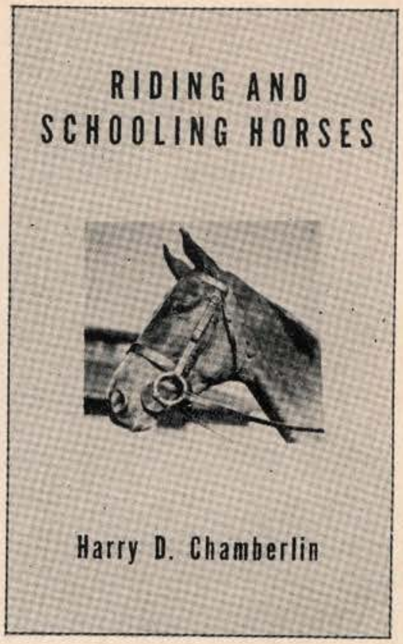

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THE ARMORED FUTURE

A distinguished military author and historian of both theaters gives us his views on what lies ahead.

★ ★ ★

COMMAND AND COMMUNICATIONS

By MAJOR RALPH E. KUZELL

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CAVALRY RECONNAISSANCE ORGANIZATION

By COLONEL C. H. REED

Former Combat Commander, 2d Cavalry Group

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THE MOBILE DIVISION OF 1950-60

By MAJOR THOMAS J. HOWARD

Some hard-to-dismiss ideas on organizing for the next war—not the last.

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THE 41ST TANK BATTALION IN THE BULGE

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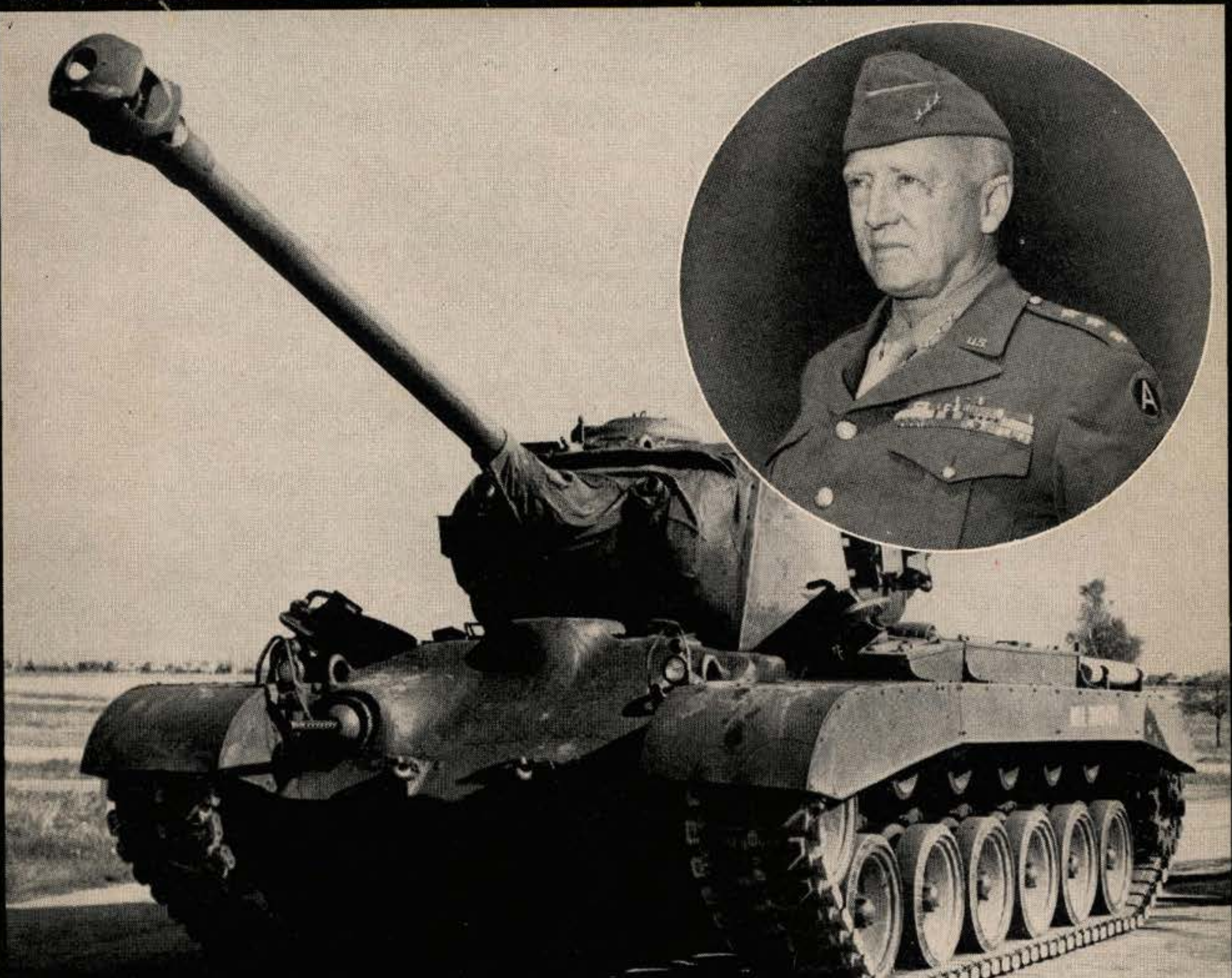

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(See page 6)

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Armored Cavalry Journal

Published Bimonthly by The U. S. Armored Cavalry Association

COLONEL WESLEY W. YALE, *Editor*
CAPTAIN WILLIAM G. BELL, *Associate Editor*
T/SGT. SAMUEL W. PUTERBAUGH, *Circulation Manager*
MILDRED F. PUTERBAUGH, *Business Manager*
All manuscripts and mail should be addressed to the editorial offices.

Volume LVII NOVEMBER-DECEMBER, 1948 No. 6

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Publication date: 25 November 1948. Deadline date, next issue: 15 December 1948.

THE ARMORED CAVALRY JOURNAL IS NOT RESPONSIBLE FOR OPINIONS EXPRESSED IN PUBLISHED CONTRIBUTIONS

Publication offices: 1406 East Franklin Street, Richmond, Virginia. Editorial offices: 1719 K Street, Northwest, Washington 6, D. C. Copyright, 1948, by the U. S. Armored Cavalry Association. Entered as second class matter at Richmond, Virginia, under the Act of March 3, 1879, for mailing at special rate of postage in Section 412, Act of October 3, 1917. Terms: Domestic subscriptions, individual and organization (military or civilian) including APO's, $3.50 per year. Foreign, $4.00 per year. Canada: including War Exchange Tax, $4.00. All subscriptions payable in advance. Single copies, 75c. The ARMORED CAVALRY JOURNAL *does not* carry paid advertisements.

by Colonel S. L. A. Marshall

THE ARMORED FUTURE

One of the foremost military writers of the day gives us his conception of the place of armor in future global strategy: an article demanding thoughtful attention at a time when much discussion centers on a Western Union.

IN an old vaudeville skit a man said to his companions: "There are five reasons why I can't play poker tonight. I haven't any money—."

They said: "Never mind the other four."

It is like that with this topic.

In 1928, Col. J. F. C. Fuller wrote four arguments why the future of the battlefield belonged to armor. His words: "It will shorten the length of battles, reduce the size of armies, make wars less frequent and reduce cost, casualties and destruction."

This was false prophecy by an otherwise true prophet, since in the event armor did none of these things.

The war was longer and costlier and the size of armies was greater than had ever been before, this being the inherent nature of wars which are fought with long-ranging weapons, and therefore threaten the safety of all people.

But my point is that Colonel Fuller might better have skipped the academic argument and gone to the fundamental: *It would happen because it was inevitable.* As he said further along: "If we must contend, it is better to fight behind armor than in woolen jackets." That stated the whole case in the fewest words.

Today there is no better reason for contending that in the future, armor's control over the field of battle will be more rather than less, compared with all that has happened.

If we can agree that the battlefield has not been eliminated, and that wars will still be won by forward movement, then decision will still devolve upon armor, and it is vain to believe that the thinking of millions of men in this industrial age can be conditioned to any sterner requirement.

Armor should be able to make an airtight case simply by leafing through the pages of the last great effort. For the war closed with its power relatively greater than ever before, still ascendant and still in the process of development. Armored success had become such an old story by 1945 that we now tend to overlook that the campaigns of the last year were undoubtedly the most brilliant of all.

But it would serve no real end to cite the record. The ear of the public is taken by the captious criticism that it is the chronic fault in military forces that they begin every new war where the last one left off. They are heedless of the warning that lessons soundly drawn from past experience are the only secure gateway to the future.

It is for this reason that it would seem more profitable to by-pass those matters which bear upon armor's place in the future tactical equation and limit the discussion to the influence of armor on the further development of a national strategy.

Once we properly evaluate the part of weapons in the shaping of national policy and in the staging of a military preparation proportionate to it, we will be moving toward a balanced future. We will be better prepared to estimate the role of any and all weapons in whatever operations may come.

This approach is not new, nor will it seem radical to those who are accustomed to weigh the problems of war according to the enduring principles. Nonetheless, it could be called old-fashioned. The German general who said: "Strategy is so much spiced garbage," might well have been the prophet of today's great majority. Always assuming that the telling weight will be on our side, it becomes such an alluring possibility that a next war might be decided in one thunderclap of action that there is no general disposition to face the question: "If your immediate tactics fail to end it, is your strategy such that you are certain to prevail?"

Once before we made a major strategic miscalculation by failing to comprehend the influence of armor upon the over-all nature of war. It is an inviolable principle in strategy, confirmed by history, though not yet sanctioned by our military teaching, that a new weapon, once introduced, will be developed to its limit, and will be exploited operationally as far as the bounds of man's imagination may carry it. The horizons of war expand ever according to this principle and to cherish the illusion that it may ever be made subject to human control is simply to put one's own strategy in shackles. Thus from 1919 onwards, while we continued to talk the language of limited war, the one ponderable reality was that the birth of armored power, abetted by the development of the air arm, was setting the world stage irremediably for total war, and that though we refused to see this reality, others would compel us to acknowledge it in time.

Today there is danger that we may make an error equally grave, and in the attempt to leap too far may stumble at the take-off.

The nations of the world have not outlawed armored power. They will probably not do so, and if they were to attempt it, they couldn't make it stick, short of a total change in the temper of life on this planet whereby it could become possible for the first time for the lion and the lamb to lie down together in contented sleep.

The world situation is therefore one in which if another great war comes, *one side will certainly attempt to employ armor in preponderant strength.*

So considering it, there are three main questions which require full study and final answer if the place of armor in the making of our national strategy is to be correctly assessed.

1. *Without armored force can there be security for any national frontiers?*

2. *Without security of frontiers can there be any prospect of viable and mutually helpful military alliances between states?*

3. *Without effective allies can the United States be sure of winning a third inter-continental war?*

If an affirmative answer can be returned right down the line on these questions, then armor has seen its greatest days and henceforth it will contribute to the national security on a diminishing scale.

But if we can't say yes to these questions—and I, for one, don't believe we can—there would seem room for agreement that armor is of the vital stuff by which we can build a new foundation for western security.

This entails not only stimulating the rebuilding of Western Europe's armored forces but broadening the base under our own, since the same considerations which justify the one step necessitate the other. If it is a preponderant armor which is needed, then we can not start with any theories that it will become possible to extract the greater from the lesser. The problem is mutual and so must be the solution. Military alliances, if they are to stand the test of war, must be based upon reciprocal military advantages. This is not possible except as both parties acquire additional security by virtue of the compact. And I would say firmly that without strength in armor, no state has the basis of security or defensive frontiers worthy of the name.

In our two world wars, the United States was a victor chiefly because we could contribute the determining portion to a side already strongly weighted. No student of either war has yet been rash enough to suggest that, if at any stage our main allies had quit, our arms still would have been strong enough to win handily.

In fact, during World War II, the mere suggestion that one of our major allies might take a run-out powder was enough to make tremors run through every office in Washington.

By this time, therefore, we should have learned something of the nature, scope and stress of great-power conflict, and if we have done so, then it is reasonable to believe that we could reach common agreement on one fundamental proposition.

If there is no absolute surety that war can be waged with the new weapons in such way that it can be ended before there is full mobilization and deployment of field armies into Western Europe, then we must accept it as probable that the war will take an ultimate form which will again force us to extend to our extreme limit.

To concede that much, and then wittingly to continue on a course which would risk the danger without cultivating effective future alliances for our side, based upon a common-sense appreciation of what it takes to win battles, would be a fool's way out. In fact, it would be an error in grand strategy as reckless of consequence as would be our politics if, at the present pass, we jettisoned all of our atom bombs in the Tuscarora Deep.

It is at this point that we may imagine a voice from the gallery objecting as follows: "Granting all that you say, why is armor the decisive element? Is it not true that each of the other main combat arms is just as essential for balanced defense?"

True, but still not the whole truth. It is like the building of a brick wall. You may have the bricks, but you don't possess a wall until you have supplied the mortar. It is from lack of armor that Western Europe's security forces are as devitalized today as a rickety

Colonel S. L. A. Marshall enlisted in the Army in June of 1917. He was commissioned in Infantry and served two years overseas, participating in the Soissons, St. Mihiel, Meuse-Argonne and Ypres-Lys Campaigns.

With World War I behind him Colonel Marshall entered upon the journalistic career that developed the military analyst of today. A five-year groundwork as Reporter and City Editor with the El Paso *Herald* terminated in 1927 with his transfer to *The Detroit News* as Military Critic and Editorial Writer, a post he holds today.

Re-entering the service in 1942 as a major, Colonel Marshall was assigned as Chief of Orientation for the Army of the United States where, in addition to other duties he established the Army News Service, wrote the basic national policy on Americans of Japanese blood, and developed the Army policy of indoctrination of enemy prisoners of war.

In August of 1943 Colonel Marshall joined the newly forming Historical Division and began an important tour which took him first to the Pacific and later to the European Theater, where he was Theater Historian at war's end, having established methods of research which became standing procedure in all theaters.

Books from the Marshall pen include *Blitzkrieg, Armies on Wheels, Island Victory, Bastogne: (The First Eight Days), Makin, Men Against Fire* and *Toward Greater Mobility.*

As a correspondent Colonel Marshall covered the Spanish Civil War in 1936-37, and attended four revolutions in Mexico, Nicaragua and Cuba. As a student of military history he became interested in the writings of J. F. C. Fuller, convinced that his doctrine of war was sound. Most of his armor thinking has its genesis in Fuller's theories, modified by separate observations and reflections.

The Armored Cavalry Journal is pleased to present *The Armored Future.*

child. There is no dearth of infantry potential. As for air power, it is one thing to demonstrate that we can take the Atlantic Ocean in a stride, but it is quite another to establish the requisite conditions enabling air to base on the Continent in support of an active defense. Air power can not stick its head in the noose of insecure ground approaches. Denied the help of armor, it is either strangled or it becomes largely neutralized by distance.

Armor is the base of national defense today for one prime reason: In the moral sense it is the warp and woof of the base in tactics. Perhaps few infantrymen or artillerymen would be willing to express it that forcefully because we all like the big role and are reluctant to yield whatever favor tradition had handed us on a platter.

But the long-accepted view of the defensive base as an area where the infantry line deploys upon the guns is sustainable now only in the small 10-cent store wars. The defensive base today is where tanks are, and where by their weight they insure integrity to the general position. No factor of change is likely to alter this relationship in the foreseeable future. Bigger bombs dropped from faster planes can have only the effect of confirming it. While there is enemy armor to threaten the infantry line and the emplaced artillery which supports it, there is no defensive stability to the base except as it is provided by a supporting armor.

It is in this particular that the role of armor within the combined arms differs so radically from the role of cavalry, prior to the time when the rifle bullet ended its reign as a shock force and turned it more exclusively toward the reconnaissance function. The time never was when cavalry formed the rock of defense. Just as truly, the time perhaps will never come when tankers will see themselves in this light. Handling a mechanism which is by nature preponderantly offensive, thinking instinctively in terms of the attack and deprecating their own tactical powers on defense where compared with the other arms, they are not fully sensible of the fact that in grand strategy it is the defensive value of armored force which weights the scale.

I doubt that this matters, so long as soldiers are supplied with more and better armor and keep working toward more efficient methods of fighting it.

What does matter is that the case be not misunderstood, or discounted, up yonder in the stratosphere of policy making. In attempting to hitch our strategic wagon to a new star, we must not make the fatal mistake of forgetting to lock the tail gate. If we are to face providently toward the future, it is important that we understand what armor alone can do for a union of freedom-seeking nations than it is to concern ourselves with what it will do for a line of infantrymen. To know the problem only halfway, as I wrote in 1940 when expressing similar thoughts on this same subject, is to miss it wholly.

Since then we have discovered that one of our direst national needs is a moral rearmament of our foot forces, an infusion of the team idea, and the rekindling of a real national spirit, lacking which the vital spark which is required of those individuals who are called to make the unequal sacrifice will never flame very high.

This is less true of what experience has taught us about armor. One of the more reassuring facts from World War II was that we had such a relatively high percentage of first-class armored divisions and that in those which were commanded with consummate boldness, the morale in all ranks was so remarkably high.

But quality without quantity will not win a major war, nor can it be expected to win a peace which is characterized chiefly by its unlimited risks.

The New M46-General Patton Tank

At a special Armistice Day ceremony at the Detroit Arsenal the Army unveiled its new tank, named in honor of a great Armored Cavalryman, General George S. Patton, Jr. General Patton's widow christened this new combat vehicle, officially designated as the M46. November 11th, in addition to being Armistice Day, is the day of General Patton's birth and was the day in 1942 on which he accepted the armistice offer of the French Forces in North Africa.

Though the new General Patton tank is superficially not greatly different from the present standard M26 medium tank, several improvements have given it greater speed, increased reliability and more maneuverability, according to test reports from Ordnance Department tank engineers.

A compact new air-cooled twelve-cylinder engine will give the General Patton tank 62 per cent more power than that delivered by the plant of the M26, but at the same time will not occupy so much space in the vehicle. The increased power—from 500 horsepower in the M26 to 810 in the M46—will increase the speed of the new tank 50 per cent over the old one, from 20 to 30 miles an hour.

A new gearing arrangement has eliminated the relatively complicated controls used in older-type tanks and has substituted a single "wobble-stick" control combining the functions of gear-shifting and steering. With this arrangement, Ordnance designers say, it is possible for the tank to go directly from high-speed forward to reverse without stopping and without the driver doing more than pulling back the "wobble-stick."

Improved traction through new design of tank treads is an important feature of the M46, according to reports of tests. A waterproofed electrical system permanently shields all circuits, and, with special intake and exhaust stacks added, the M46 tank is capable of fording streams so deep that the entire engine is submerged. With the hull winterized, the M46 will be able to operate in temperatures as low as 65 degrees below Fahrenheit zero.

A 90-millimeter gun firing high-velocity, armor-piercing shells will give the tank its principal wallop.

Major General Everett S. Hughes, Chief of Ordnance, and Major General Hobart R. Gay, General Patton's wartime Chief of Staff, spoke at the Detroit Arsenal ceremonies. (See cover.)

The Mobile Division of 1950-60

CARDED

by Major Thomas J. Howard

Many of our readers will recall the article "Mobile Ground Troops of the Future" by Colonel Hamilton H. Howze, which appeared in the July-August 1947 issue of the *Journal*. With that as a basis, Major Thomas J. Howard, attending the recent Advanced Officers Course at The Armored School, developed an excellent monograph which has been adapted to *Journal* use and which we commend to your attention. It should be stated that the proposals offered are those of the author and do not in any way reflect official thought or indorsement.

INTRODUCTION

SHORTLY after the end of the war Infantry and Armored Conferences were held, attended by many who had served as commanders of combat echelons ranging in size from the company to the army. The results of these two conferences are embodied in the Tables of Organization of the new infantry and armored divisions. These are strong, well-balanced units, more than capable of accomplishing missions normally assigned to them.

It is reasonable to expect that they would be suitable for employment at any time within the next five or six years. They are equipped with the best equipment used in the last war, and reinforced to eliminate what appeared to be the weaknesses exposed during the past conflict. *But these divisions are designed better to fight the last war, and the enemy encountered then.*

A very noticeable trend appeared, one that might give us pause for reconsideration. This was the tendency to so equip *both* types of division that they could be used relatively independently of one another. The infantry division received its own tanks in sufficient strength to carry out limited exploitation missions in addition to strengthening its assault powers; the armored division was given sufficient infantry to carry out its own assaults and river crossings to a limited extent, in addition to strengthening its exploiting power.

Thus both divisions appear to have gained from this implementation. The only fly in the ointment, so to speak, is the complication of the supply problem for both, in many items doubling the tonnage requirements. This, considering the experience of the last war, is not an insoluble problem; we had between 85 and 90 divisions in combat and supplied them all with astonishingly few shortages.

But what if we have to produce 200 or more (including Allied) divisions at some future date? Can we provide the infinite variety of equipment necessary in the outfitting and sustenance of these units as we now have them planned?

Mobility, fire power and shock action are still required characteristics of a mobile division, whether it go under the name "Cavalry" or "Armor." *The missions of exploitation, counterattack and pursuit are the primary missions of these divisions, whether they use tanks, elephants, horses or flying discs to accomplish them.*

In an article entitled "Mobile Ground Troops of the Future," which appeared in the July-August 1947 issue of the ARMORED CAVALRY JOURNAL, Colonel Hamilton Howze presented a concrete organization which will better provide these characteristics. This organization, with its complementary required characteristics of equipment, must necessarily be limited by a time factor. I have made my proposal along this line, within the limitations of the coming decade.

SECTION 1: VEHICLES

General. In the present armored division we have four types of tanks, each presumably designed to do a different job. We have seven different weights of trucks, although the 2½-ton truck in its many different body styles predominates. There are still six motorcycles in the Tables of Equipment. This division requires *1220 gallons of gasoline to move one mile.*[1]

Undoubtedly we could provide the gasoline to sustain a large number of these divisions in action over a considerable period of time. Gasoline, however, is a bulky item and requires special handling. If it were possible to cut this consumption nearly in half, and yet have the same or greater mobility and fighting strength, would not that be preferable? There is no need to go into the problems of gasoline supply here, as they are familiar to all as one of the formidable logistical problems that always must be solved before we can undertake an offensive of any sort beyond our own shores. If we can reduce our requirements to a minimum, it will be possible to support just that many more divisions from the same source and capacity of supply.

---

[1] FM 101-10 (Draft), C&GSC, 1947, chap 5, p 14.

It should be mentioned that the scope of this article is to discuss only those units of the mobile division that are not components of other arms and services. No attempt will be made to discuss in detail medical detachments, the signal company, military police company, engineer battalion, division artillery, quartermaster or ordnance battalion. This applies equally to the vehicles. Considered in this section are only the vehicles used in the battalions of the main striking elements (reconnaissance, rifle and tank battalions).

Tanks

During World War II I had the privilege of serving with a cavalry group that had a good reputation for offensive action. During the early part of its operation the group was equipped with the light tank, M5. Nearly every tank that was lost would have been destroyed had it had the armor protection provided by the medium tank. We considered our tank platoons to be generally timid, as they were usually reluctant to engage in any action where enemy tanks could be expected.

Shortly after the first of 1945 the M5 was replaced by the M24 with its light 75mm gun. It is worthy of note that the M24 had *at most* one inch of armor plate, either on the hull or the turret. The M5 had up to one and one-half inches on the turret and one inch on the hull.[2]

The amazing change in the offensive capabilities of the tank companies was therefore the basis for the conclusion that what the men wanted was a gun, not more armor plate. Our percentage of losses with the M24 was lower, but no valid conclusions can be drawn therefrom, as German resistance was very spotty after we received those tanks. However, the aggressive attitude of the tankers materially speeded most small unit actions, and I am certain that had we been able to repeat the actions of 1944 with the M24 we would have been much more successful and less likely to hesitate in committing ourselves to actions involving enemy tanks or a similar threat.

Let us now set down the specific desired characteristics for our tank of 1950-60. All those set forth below have been discussed with people who should know, and are deemed feasible for production by 1950.

General

Weight—Not over 50,000 pounds (25 tons).
Height—Not over 80 inches.
Ground Clearance—At least 17 inches.
Ground Pressure—Not over 9 pounds per square inch.

Performance

Sustained Speed—At least 35 miles per hour.
Fuel Consumption—Not over .7 gallons per mile, preferably low grade fuel.
Grade—At least 60%, both ascending and descending.
Horsepower to Weight Ratio—At least 20 hp/ton.

Armament

Main—Capable of penetration of 10 inches of homogeneous armor plate at a range of 2000 yards at 30° obliquity (this implies use of specialized projectile and ammunition); also capable of delivering effective high explosive fire to maximum sight range; improved fire control and automatic loading.
Machine Guns—Two of possibly .50 caliber mounted coaxially; one in bow, fired remotely; one antiaircraft gun on outside of turret.
Vehicle Defense—Capable of masking the vehicle or keeping enemy personnel beyond destructive distance (white phosphorus?).

Communications

Non-command Tanks—Two or three preset frequency FM equipment of standard now embodied in the AN/VRC 5-8 series.
Command Tanks—At least ten preset frequency equipment of same standard.
(Interphone to be available on both tanks.)

Armor—Capable of protection from small arms and indirect artillery fire except direct hits; such additional as will not interfere with other desired characteristics. All designed with best possible slope.

We will now christen this vehicle the *MX1*.

Personnel Carriers

The half-track has long been considered unsatisfactory as a personnel carrier for several reasons, the most important of which are lack of cross-country mobility

ABOUT THE AUTHOR

Major Thomas J. Howard was integrated into the Army in 1946 after entering upon active duty from Reserve status at the start of the war. His early assignments included the 4th and 16th Cavalry Regiments. In 1943 he attended the Command and General Staff College. Combat assignments were with the 505th Parachute Infantry and the 106th Cavalry Group. Following a tour as Chief of the Communications Department at the Cavalry School, Major Howard attended the Advanced Officer's Course at The Armored School. He is now ROTC Instructor at Norwich University, Northfield, Vermont.

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[2] "Development of Armored Vehicles" The Armored School, pp 123 and 147.

and lack of overhead cover. At the same time, the full track carrier has suffered in reputation from a seemingly too expensive method of transportation of personnel, in weight and gas consumption factors.

Our standards for a personnel carrier should include the following factors: mobility equal to that of the tank; protection from small arms and artillery fire, including overhead cover; economy in fuel consumption; interchangeability of parts with the basic tank being used (in this case the MX1); appreciable reduction of inside noise; communication facilities that tie into unit to which the vehicle is assigned and including components that can be easily demounted and carried by the dismounted squad; provision for easy conversion into convenient command post vehicles.

The characteristics have been given as generalities, as it is felt that the development of the personnel carrier must go hand in hand with that of the basic tank. It follows, then, that whenever work is going forward on the basic tank, the personnel carrier must be undergoing similar development, in all cases a companion of the tank. Let us call this generalization the *MX2*.

FIGURE 1 THE TANK PLATOON

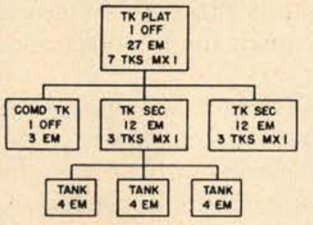

TK PLAT
1 OFF
27 EM
7 TKS MX1
COMD TK
1 OFF
3 EM
TK SEC
12 EM
3 TKS MX1
TK SEC
12 EM
3 TKS MX1
TANK
4 EM
TANK
4 EM
TANK
4 EM

FIGURE 2 THE RIFLE PLATOON

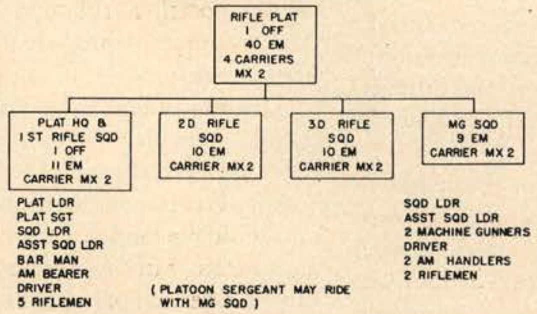
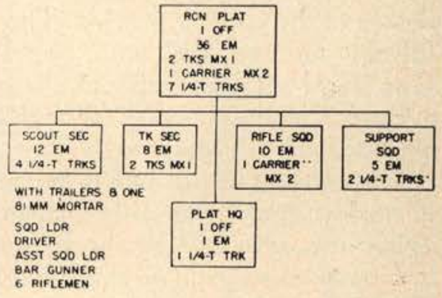

RIFLE PLAT
1 OFF
40 EM
4 CARRIERS
MX 2
PLAT HQ &
1ST RIFLE SQD
1 OFF
11 EM
CARRIER MX 2
2D RIFLE
SQD
10 EM
CARRIER MX2
3D RIFLE
SQD
10 EM
CARRIER MX2
MG SQD
9 EM
CARRIER MX 2
PLAT LDR
PLAT SGT
SQD LDR
ASST SQD LDR
BAR MAN
AM BEARER
DRIVER
5 RIFLEMEN
(PLATOON SERGEANT MAY RIDE
WITH MG SQD)
SQD LDR
ASST SQD LDR
2 MACHINE GUNNERS
DRIVER
2 AM HANDLERS
2 RIFLEMEN

FIGURE 3 THE RECONNAISSANCE PLATOON


RCN PLAT
1 OFF
36 EM
2 TKS MX1
1 CARRIER MX2
7 1/4-T TRKS
SCOUT SEC
12 EM
4 1/4-T TRKS
TK SEC
8 EM
2 TKS MX1
RIFLE SQD
10 EM
1 CARRIER
MX 2
SUPPORT
SQD
5 EM
2 1/4-T TRKS
WITH TRAILERS & ONE
81 MM MORTAR
PLAT HQ
1 OFF
1 EM
1 1/4-T TRK
SQD LDR
DRIVER
ASST SQD LDR
BAR GUNNER
6 RIFLEMEN

Tank Recovery Vehicles

Again we have a vehicle which must follow the development of the basic tank. Its capabilities are contained in its name, and in addition it must have communication and defensive weapons. It must fall within the general weight limitation of 25 tons, as must all vehicles in the division. We will call this the *MX3*.

Trucks

There are requirements within the battalions for four types of trucks, including ambulances. The presently available wheeled vehicles would satisfy our requirements if it were not for the fact that new power train developments give great promise in simplification and reduction of fuel consumption. Our Field Forces boards are exploring all possibilities, and undoubtedly will present us with much improved vehicles within the next few years. Those trucks considered in this category in addition to the ambulance are the ¼-ton truck, 2½-ton truck and the heavy wrecker, M1A1. For the purposes of further comparison and data the present fuel consumption and load capacities of these vehicles should be used.

SECTION 2: PLATOONS

General. In organizing this material, it has been difficult to find an easy approach to the proper discussion of the organization and at the same time show good reason for each innovation. Therefore, to better illustrate the standardization that exists in the mobile division, it was decided to discuss it on the various command levels, putting the basic organizations together to form the units and organizations of the division. Subsequent sections will be devoted to the successive command levels. Not considered in this section are those platoons not basic, but normally contained in the headquarters of companies and battalions.

It is intended to arrive at a striking element of *six tank battalions, one rifle battalion and a reconnaissance battalion, to replace the four tank battalions, four armored infantry battalions and one reconnaissance battalion* as found in the *present* armored division. These new battalions will use commonly the same tank, rifle and reconnaissance platoons and companies throughout. A comparison of these elements appears in Section 6.

The Tank Platoon

(See Figure 1)

There are two innovations here: the larger number of tanks in the platoon, and the section of three tanks. There is very little reason why this could not be divided into three sections of two tanks each, but it looks a little easier from the control point of view to divide it in two, using the same tactics as with two sections of two tanks each.

A third "innovation" is the return to the four-man crew. It is realized that a five-man crew handles the work with much more ease, and that when one man out of each of several crews is absent the tanks are still operative. Again it is a matter of choice, but with the development of control within the vehicle to the point where it can be handled by three men, it is a preferred solution.

A further justification of the seven-tank platoon to be offered in passing is the experience of many of us that very seldom during combat are platoons complete. There are usually shortages within every company that are filled for only a short time before losses occur again. Seven tanks offer the platoon leader the opportunity of employing fire and maneuver when he has lost over half his strength.

THE RIFLE PLATOON

(See Figure 2)

The rifle platoon presented here differs little from the rifle platoon of the armored infantry battalion as it is now in the armored division. There are three less riflemen in the machine gun squad, and necessarily the communication arrangement is different.

It is contemplated that in addition to the normal vehicular communication tied into whatever unit this platoon may be assigned, a dismounted set which will communicate with the "B" set of the interim AN/VRC 5-8 will be carried from two of the personnel carriers. These sets have reached the development stage where reduction of weight is the primary consideration. These sets will relay through the vehicular sets when necessary, so that dismounted and mounted units may be netted together with little trouble. There is also being developed a fine small set to replace the SCR 536.

The employment of the rifle platoon in mobile units differs a great deal from the employment of the rifle platoon of the infantry division. The two have entirely different missions, and must be trained accordingly. True, they both work with tanks, but there the similarity ends. The one supports the tanks, and the other is supported by the tanks.

A recognition of this fact is implicit in the methods of employment of the tank company of the infantry regiment as advocated by the Infantry School. Those tank companies should be trained and used as infantry units. It follows, then, that any rifle support in mobile units should by the same token be trained and used by commanders of the mobile units.

THE RECONNAISSANCE PLATOON

(See Figure 3)

Here appears the first basic organization with its own base of fire, maneuvering element and sufficient rifle strength. Here first appear the training problems of combined mounted and dismounted units.

The reconnaissance platoon used here is almost identical with the one now used in the armored division. The only differences are in the tracklaying vehicular equipment and consequent reduction of one man per tank crew.

The attention of the reader is invited to the support squad and its 81mm mortar. This may be contrasted to the mortar platoon in the armored infantry company of the present division, where one officer and 24 enlisted men, three carriers and one ¼-ton truck are utilized to handle three 60mm mortars. Of course, it is intended that these mortars be hand-carried some distance when the battalion or company is employed in dismounted action. It is still implied by the organization of the support squad, however, that the dismounted part of the platoon will never be employed beyond any point of support where a ¼-ton truck could not take the mortar. More of this in the next section.

This platoon is organized to make it flexible and useful under rather independent conditions. It contains those elements considered necessary to fight for information, perform security missions, and on occasion fight limited defensive missions. It embodies all that is best in our present-day organizational doctrine, with none of the disadvantages of mixed command that result when habitual reinforcements must be given to small mechanized units to give them strength.

These basic units presented in this section in this brief form will provide the background of the subsequent sections. They will be used in several combinations as the successive levels of command are discussed. These combinations have been considered primarily from the point of view: "What is the mission?" The simplicity and versatility of the organization will become more apparent as the framework is built upon.

SECTION 3: COMPANIES

THE TANK COMPANY

(See Figure 4)

Here is the first major departure from present accepted doctrine—riflemen within the tank company. It is not without precedent; witness the reconnaissance platoon.

The objections voiced most frequently against the use of a rifle platoon within the tank company were the difficulty of training and the possible prejudice of the company commander in favoring his tank platoons in choice of personnel. Experience seems to answer these arguments with numerous examples, notably the infantry rifle company, where the mortar and machine gun platoons have been used successfully for years.

Certainly a more difficult, but not insurmountable, training problem is presented. But here on the company level the commander can make sure of the state of cooperative training, where before he could hope only for the best from whatever infantry unit attached. These men now will have an undivided allegiance to the tank unit, which before was nebulous at best. True, there is not sufficient rifle strength in this tank company for all missions assigned, but the nucleus for most routine missions is established. Perhaps it would be better to have a company of two tank platoons and two rifle platoons, and certainly that would serve better for the heavier assault missions. But here we must strike a *minimum* balance; therefore, it was felt that the one platoon was sufficient. The argument that a company commander would discriminate against the dismounted element in selection of personnel needs little rebuttal.

The tank strength of this company is one more than that of the present heavy tank company of four platoons. With the tank of the characteristics described in Section 1, this company will have more mobility than the medium company, as good defense against enemy armor as the heavy company, and much more inherent flexibility than either one. Certainly this company will be capable of limited independent missions, but its main role is that of part of a larger force.

For those missions where the present tank company is reinforced by a platoon of armored infantry, we have already provided the rifle strength. The necessity of reorganizing communications, supply and maintenance for the bulk of combat operations has been eliminated. It is not proposed to discuss here the details of operations, but one should understand the implication of this rifle strength in the simplification of organization for combat plus the certainty of availability of this strength.

THE RIFLE COMPANY

(See Figure 5)

Here is an orthodox organization, with only one major difference between it and the rifle company of the armored infantry battalion—a substitution of 81mm for 60mm mortars. The 60mm mortar platoon was devised to move the mortar almost any distance by hand carry, with sufficient ammunition to last for some time without replacement.

The support squad of the reconnaissance platoon, on the other hand, is manned by only enough people to get the mortar in and out of action short distances from the vehicles, with sufficient ammunition in the trailer and body of the second vehicle to provide sustained fire for some length of time. The ¼ ton truck can go almost anywhere foot troops can, and only if the reconnaissance platoon were employed in an extended dismounted action would there be difficulty in providing for the mortar.

Based on this premise, the mortar squads of the mortar platoon of this rifle company were mounted similarly. Placing them in personnel carriers, where they must always move dismounted when the troops move out on foot, meant using the lighter mortar and ammunition. It is felt that normally the mortars can be moved close to supporting positions for the riflemen or tanks by use of the ¼-ton truck.

There will be many who consider it unwise to do this, as they feel that the mortars must be able to go anywhere the foot troops are able to go. That can be done by the use of one or two mortars from the mortar platoon to support a river crossing, for example, the third mortar and additional ammunition coming across later.

The 81mm mortar is much the preferred weapon of the two as far as the troops are concerned, and in the proper hands is one of the most potent offensive or defensive weapons. The advantage of being able to carry the heavier mortar for 95% of your actions far outweighs the loss of one of them where all three cannot be taken into action by the mortar platoon.

The use of the half-track or similar vehicle as is done in the headquarters of the armored infantry battalion for the 81mm was considered. Although a fast method of getting mortars into action, it has rather an inflexible tie to the vehicle. The ¼-ton truck has several advantages, even if the mortar must always be set up on the ground.

Other than the exclusion of the filler personnel from company headquarters, the remainder of the organization is much the same as the rifle company of the armored infantry battalion.

THE RECONNAISSANCE COMPANY

(See Figure 6)

This company is again much the same as the one found in the present armored division. Again we have excluded the fillers, to be discussed briefly in Section 6. It will be noted that one type of vehicle has been eliminated, the 1½-ton truck. The advantage of having this particular size of vehicle is outweighed by the elimination of a type.

The employment of this company is envisioned much as that set down by current doctrine of The Armored School, except that it is felt that less emphasis need be placed on its limited defensive capabilities. Rifle strength was added to the platoon to give it that defensive strength, and the use of the standard tank within the platoon will give it infinitely more defensive ability against tanks. This weakness during World War II led to reinforcement or relegation to roles which were unsuited to such an expensive organization.

SECTION 4: BATTALIONS

THE TANK BATTALION

(See Figure 7)

Here is the basic tactical striking element of the division, the one around which all other units are organized. It must inherently possess all the qualities which characterize the mobile unit—mobility, fire power and shock action. It must have sustained offensive power and the ability to defend itself under all circumstances except a sustained defense.

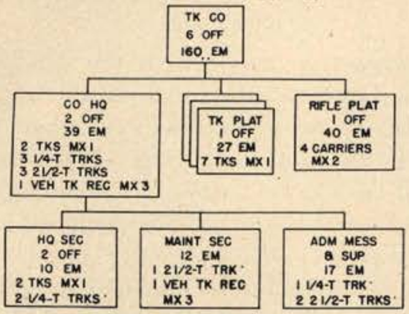
Therefore, a battalion of 75 tanks accompanied by sufficient rifle strength to provide two platoons of riflemen for each tank company was deemed best to fit the requirements. The minimum rifle strength is provided in the tank company, where it is agreed by most that it is needed nearly all the time. That strength, however, is not sufficient for some of the normal missions of the battalion, so the additional company was provided the battalion commander for use as needed.

The advantages of the organic rifle company are obvious: continuous control, intimacy and confidence of company and platoon commanders, and better continuity of unit training are among the many. Not to be ignored is the advantage of the battalion commander in having his normal support always at hand, tied into his administrative, communications and supply systems.

The four-company battalion is not new, and should require little discussion. In this case the familiar three-element force is supported by the fourth. In a support-type battalion, the four-company concept assumes a different meaning.

Headquarters and service company is organized along conventional lines, with the current trend of increasing cargo truck support accepted. The reconnaissance platoon is continued as in the present tank bat-

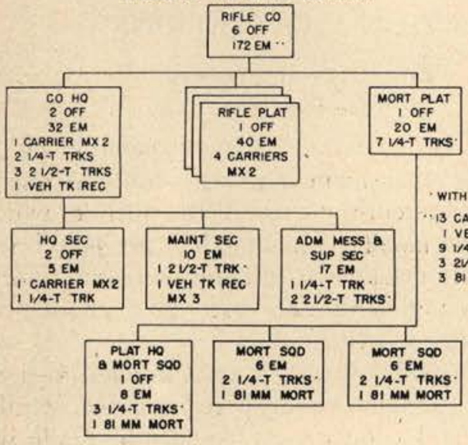
FIGURE 4 THE TANK COMPANY


TK CO 6 OFF 160 EM**
CO HQ 2 OFF 39 EM 2 TKS MX1 3 1/4-T TRKS 3 21/2-T TRKS 1 VEH TK REC MX 3
TK PLAT 1 OFF 27 EM 7 TKS MX1
RIFLE PLAT 1 OFF 40 EM 4 CARRIERS MX 2
HQ SEC 2 OFF 10 EM 2 TKS MX1 2 1/4-T TRKS*
MAINT SEC 12 EM 1 21/2-T TRK* 1 VEH TK REC MX 3
ADM MESS & SUP 17 EM 1 1/4-T TRK* 2 21/2-T TRKS*

* WITH TRAILERS

** 23 TKS MX1
4 CARRIERS MX 2
1 VEH TK REC MX 3
3 1/4-T TRKS (W/TRAILERS)
3 21/2-T TRKS (W TRAILERS)

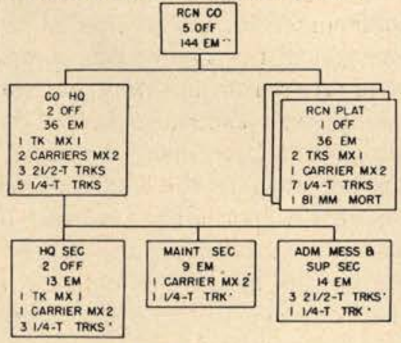
FIGURE 5 THE RIFLE COMPANY


RIFLE CO 6 OFF 172 EM**
CO HQ 2 OFF 32 EM 1 CARRIER MX 2 2 1/4-T TRKS 3 2 1/2-T TRKS 1 VEH TK REC
RIFLE PLAT 1 OFF 40 EM 4 CARRIERS MX 2
MORT PLAT 1 OFF 20 EM 7 1/4-T TRKS*
HQ SEC 2 OFF 5 EM 1 CARRIER MX2 1 1/4-T TRK
MAINT SEC 10 EM 1 21/2-T TRK* 1 VEH TK REC MX 3
ADM MESS & SUP SEC* 17 EM 1 1/4-T TRK* 2 21/2-T TRKS*
PLAT HQ & MORT SQD 1 OFF 8 EM 3 1/4-T TRKS* 1 81 MM MORT
MORT SQD 6 EM 2 1/4-T TRKS* 1 81 MM MORT
MORT SQD 6 EM 2 1/4-T TRKS* 1 81 MM MORT

* WITH TRAILERS

** 13 CARRIERS MX 2
1 VEH TK REC MX 3
9 1/4-T TRKS (8 W/TRAILERS)
3 21/2-T TRKS (W/TRAILERS)
3 81 MM MORTARS

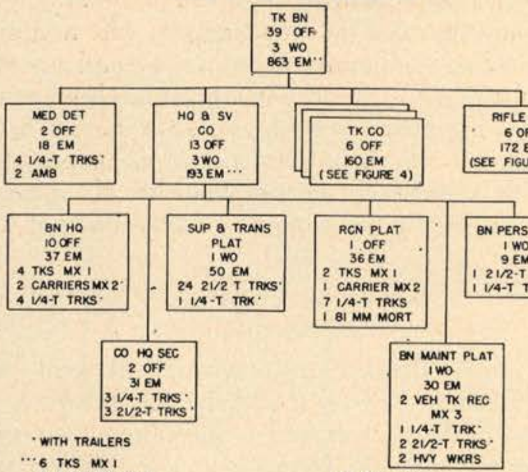
FIGURE 6 THE RECONNAISSANCE COMPANY


RCN CO 5 OFF 144 EM**
CO HQ 2 OFF 36 EM 1 TK MX1 2 CARRIERS MX 2 3 21/2-T TRKS 5 1/4-T TRKS
RCN PLAT 1 OFF 36 EM 2 TKS MX1 1 CARRIER MX 2 7 1/4-T TRKS 1 81 MM MORT
HQ SEC 2 OFF 13 EM 1 TK MX1 1 CARRIER MX2 3 1/4-T TRKS*
MAINT SEC 9 EM 1 CARRIER MX 2* 1 1/4-T TRK*
ADM MESS & SUP SEC 14 EM 3 21/2-T TRKS* 1 1/4-T TRK*

* WITH TRAILERS

** 7 TANKS MX1
5 CARRIERS MX 2
26 1/4-T TRKS (11 W/TRAILERS)
3 21/2-T TRKS (W/TRAILERS)
3 81 MM MORTARS

FIGURE 7 THE TANK BATTALION

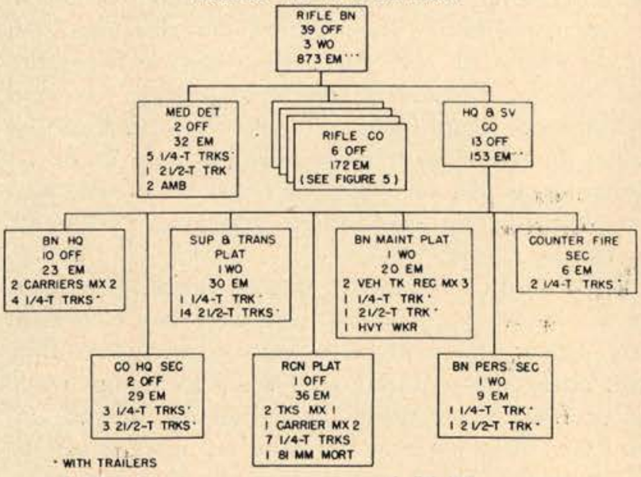

TK BN 39 OFF 3 WO 863 EM**
MED DET 2 OFF 18 EM 4 1/4-T TRKS* 2 AMB
HQ & SV CO 13 OFF 3 WO 193 EM***
TK CO 6 OFF 160 EM (SEE FIGURE 4)
RIFLE CO 6 OFF 172 EM (SEE FIGURE 5)
BN HQ 10 OFF 37 EM 4 TKS MX1 2 CARRIERS MX 2* 4 1/4-T TRKS*
SUP & TRANS PLAT 1 WO 50 EM 24 21/2 T TRKS* 1 1/4-T TRK*
RCN PLAT 1 OFF 36 EM 2 TKS MX1 1 CARRIER MX 2 7 1/4-T TRKS 1 81 MM MORT
BN PERS SEC 1 WO 9 EM 1 21/2-T TRK* 1 1/4-T TRK*
CO HQ SEC 2 OFF 31 EM 3 1/4-T TRKS* 3 21/2-T TRKS*
BN MAINT PLAT 1 WO 30 EM 2 VEH TK REC MX 3 1 1/4-T TRK* 2 21/2-T TRKS* 2 HVY WKRS

* WITH TRAILERS

*** 6 TKS MX1
3 CARRIERS MX 2
2 VEH TK REC MX 3
17 1/4-T TRKS (15 W/TRAILERS)
30 21/2-T TRKS (W/TRAILERS)
2 HVY WKRS
1 81 MM MORT

** 75 TKS MX1
28 CARRIERS MX 2
6 VEH TK REC MX 3
39 1/4-T TRKS (37 W/TRAILERS)
42 21/2-T TRKS (W/TRAILERS)
2 HVY WRKS
2 AMB
4 81 MM MORT

FIGURE 8 THE RIFLE BATTALION

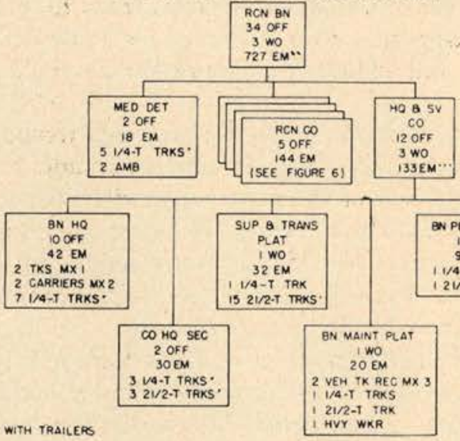

RIFLE BN 39 OFF 3 WO 873 EM***
MED DET 2 OFF 32 EM 5 1/4-T TRKS* 1 21/2-T TRK 2 AMB
RIFLE CO 6 OFF 172 EM (SEE FIGURE 5)
HQ & SV CO 13 OFF 153 EM**
BN HQ 10 OFF 23 EM 2 CARRIERS MX 2 4 1/4-T TRKS*
SUP & TRANS PLAT 1 WO 30 EM 1 1/4-T TRK* 14 21/2-T TRKS*
BN MAINT PLAT 1 WO 20 EM 2 VEH TK REC MX 3 1 1/4-T TRK* 1 21/2-T TRK* 1 HVY WKR
COUNTER FIRE SEC 6 EM 2 1/4-T TRKS*
CO HQ SEC 2 OFF 29 EM 3 1/4-T TRKS* 3 21/2-T TRKS*
RCN PLAT 1 OFF 36 EM 2 TKS MX1 1 CARRIER MX 2 7 1/4-T TRKS 1 81 MM MORT
BN PERS SEC 1 WO 9 EM 1 1/4-T TRK* 1 21/2-T TRK*

* WITH TRAILERS

** 2 TKS MX1
3 CARRIERS MX 2
2 VEH TK REC MX 3
19 1/4-T TRKS (14 W/TRAILERS)
19 21/2-T TRKS (W/TRAILERS)
1 HVY WKR
1 81 MM MORT

*** 2 TKS MX1
55 CARRIERS MX 2
6 VEH TK REC MX 3
60 1/4-T TRKS (51 W/TRAILERS)
32 21/2-T TRKS (W/TRAILERS)
1 HVY WKR
2 AMB
13 81 MM MORT

FIGURE 9 THE RECONNAISSANCE BATTALION


RCN BN 34 OFF 3 WO 727 EM**
MED DET 2 OFF 18 EM 5 1/4-T TRKS* 2 AMB
RCN CO 5 OFF 144 EM (SEE FIGURE 6)
HQ & SV CO 12 OFF 3 WO 133 EM***
BN HQ 10 OFF 42 EM 2 TKS MX1 2 CARRIERS MX 2 7 1/4-T TRKS*
SUP & TRANS PLAT 1 WO 32 EM 1 1/4-T TRK 15 21/2-T TRKS*
BN PERS SEC 1 WO 9 EM 1 1/4-T TRK* 1 21/2-T TRK*
CO HQ SEC 2 OFF 30 EM 3 1/4-T TRKS* 3 21/2-T TRKS*
BN MAINT PLAT 1 WO 20 EM 2 VEH TK REC MX 3 1 1/4-T TRKS 1 21/2-T TRK 1 HVY WKR

* WITH TRAILERS

*** 2 TKS MX1
2 CARRIERS MX 2
2 VEH TK REC MX 3
13 1/4-T TRKS (W/TRAILERS)
20 21/2-T TRKS (W/TRAILERS)

** 30 TKS MX1
22 CARRIERS MX 2
2 VEH TK REC MX 3
117 1/4-T TRKS (57 W/TRAILERS)
25 21/2-T TRKS (W/TRAILERS)
1 HVY WKR
12 81 MM MORT

talion, with the presentiment that perhaps two of them would not be amiss.

A point to be remembered is that the 81mm mortars of the rifle company are available to the commander even if he is not employing the company, or when it is parcelled out to the tank companies. Too often in the past have we ignored or failed to exploit the potentialities of these potent "small unit artillery" pieces.

The medical detachment is no different from those found in present organizations. It is manned and equipped to provide an aid station and an evacuation system for the battalion, in addition to one vehicle for each of three tank companies.

The reader may note the lack of assault guns in the battalion. This was a deliberate omission in favor of simplification and standardization. The desire of the battalion commander to have his own artillery is understandable, but it is contended that the employment of the assault gun in direct fire has no advantage over direct tank fire; when used in indirect fire the assault gun becomes an artillery piece. If there is insufficient artillery in the division, that should be remedied. As things stand with our present methods of fire control, it is felt that sufficient fires can be massed in support of the tank battalion without the addition of assault guns.

THE RIFLE BATTALION

(See Figure 8)

This is not an infantry unit, much as it resembles one. It is organized for the purpose of supporting the striking elements of the division, and may be employed in any manner which will best provide that support.

In river crossings, sustained defense and in the penetration, this battalion will probably be employed organically. In most other situations it could be apportioned out as seen fit by the division commander. With the organic rifle strength of the tank battalion as heavy as it is, the rifle battalion could be held in reserve a good deal of the time. This would prevent unnecessary dissipation of the rifle strength of the division, materially affecting the sustaining power of the striking elements.

There is no heavy weapons unit in this battalion for two reasons: it normally will be employed in support of a unit of heavy fire power, and the 81mm mortars within the companies provide the medium mortar support. It is possible that the addition of perhaps eight 4.2 inch heavy mortars within the battalion headquarters and service company might be advantageous.

This battalion is the only one to have a counterfire section, for the reason that the tank units are not as vulnerable to mortar fire, and to provide them with this defense seems to be unnecessary. If it proves to be an effective measure against enemy high trajectory fire, let us by all means put it wherever it can be of value.

The four-company organization used here is a different concept from that of the tank battalion. Here we may attach one company to another unit and still have available the triangular organization for organic employment. Assuming six tank battalions and one rifle battalion in the division, the number of other possible combinations is great.

THE RECONNAISSANCE BATTALION

(See Figure 9)

As with the other reconnaissance elements, this one differs little from that of the present division. The four-company concept was retained, and the headquarters and service company is little changed.

There are many who feel that the reconnaissance battalion, particularly, needs assault guns, as it is employed so often beyond the range of division artillery.

This is a sound argument, and those same people then advance the argument that it is not normal to attach a battery of artillery to provide close support. Perhaps it would be feasible to provide an additional battalion of artillery in the division just for such purposes, with the batteries organized to provide complete fire control and ammunition supply when continuously employed on missions away from the battalion.

There has been advanced also the argument that the present reconnaissance battalion should be reinforced by a medium tank company, as is the battalion of the armored regiment (light). This argument is met by providing the battalion with the same tank as the tank battalion. This is one more argument in favor of the standard tank.

The service facilities of the headquarters and service company have been improved by increasing the number of trucks in the supply and transportation platoon. This was considered reasonable by comparison with the number of men and vehicles in the tank and rifle battalions.

The differences in totals of men of the companies and battalion are mostly accounted for in the four-man tank crew and the elimination of fillers. This will be taken into account when making comparisons with the present division.

SECTION 5: OTHER ELEMENTS

General. It is not intended to discuss those elements of the division which come under the supervision of other arms and services, other than to comment briefly on some desired characteristics and capabilities. Detailed tables of organization of those elements should be written by the arm or service concerned.

In general, it seems that the present supporting elements with minor changes to encompass the different striking elements would be sufficient. These minor changes are not pertinent to this article.

SECTION 6: COMPARISONS

For the purpose of comparison, let us form our battalions into the striking element of the division. It is believed that a proportion of six tank battalions, one rifle battalion and one reconnaissance battalion will serve the desired purpose. The present division has four tank battalions (three medium and one heavy), four armored infantry battalions and a reconnaissance battalion.

		Nine Battalions Present Division	*Eight Battalions Mobile Division*
Total Officers		355	307
Total Warrant Officers		27	24
Total Enlisted Men		7483	6778[3]
Tanks Light	46	349	482 (MX1 only)
Med M4	216		
Med M45	24		
Med M26	63		
Mortars 60mm	48	80	49 (81mm only)
81mm	32		
Battalion Headquarters		9	8
Company Headquarters		44	40
Tank Platoons		48 (5 tanks)	54 (7 tanks)
Rifle Platoons		48	48
Reconnaissance Platoons		20	19

Some of these differences deserve explanation. It might be noted that officers have been left out of the supply and transportation platoon, battalion maintenance platoon and the eliminated assault gun platoon. It is felt that warrant officers should be used exclusively for all the lower level specialist positions.

The difference in enlisted men can be accounted for by one less man in each tank crew and the filler personnel, plus a little gain from eliminated headquarters.

The difference in tank strength, of course, was one of the main objects of this article. To increase the striking ability of the division while at the same time increasing its mobility without sacrifice of rifle strength was more or less the complete objective. It is anticipated that this type of division might at times take higher tank losses than would a heavier (in weight of iron) division, and that is taken into account on all levels.

The mortar comparison, although seeming to be unfavorable to the mobile division, places all those mortars at company or lower level, whereas all the 81mm mortars in the present division except in the reconnaissance units are on battalion level. The loss of mortars was caused by the elimination of the armored infantry battalion headquarters.

The comparison of headquarters, although not material, is interesting and was used to show the lesser number used to control more tanks and as many rifle platoons.

And therein lies the crux of the comparison. *With 133 more tanks and the same number of rifle platoons, this division will have over 300 less men.* If a four-man tank were used in the present division, the total would be 7134 against 7156 for the mobile division (with fillers).

CONCLUSION

I have tried as conscientiously as possible to follow the principles set down by Colonel Howze in his article "Mobile Troops of the Future." At the same time I have gone beyond him in rifle strength within the tank battalions. I have not gone as thoroughly into some of the allied subjects as was possible, but I felt them outside the scope of this article. In this category fall artillery calibers, self-propelled bridging, armor-piercing projectiles and allied subjects.

But if the idea of *integrated* rifle and tank strength, used in the lightest and fastest equipment, employed en masse with speed, surprise and shock, is accepted, then our purpose is achieved.

"The evolution of tactics is continuous. Formalism and traditionalism in most armies resist the evolution of tactics."[4] It is to be hoped that this evolution will be aided and encouraged by all members of our armed forces.

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[3] Part of this difference is in filler strength. Add 378 fillers for purposes of comparison (rifle companies 10%, reconnaissance companies 5% and tank companies 6%).

[4] Encyclopaedia Britannica, Vol. 21, p 750, 1946 edition.

URGENT

The Organized Reserve Corps has a definite program—an essential mission in the D-Day Striking Force—which requires the active participation of many more Reserve Officers.

Thousands of unit assignment vacancies exist in the 18-25 Division Striking Force, particularly in the company grades.

Reserve Officers who expressed a preference for transfer to the Inactive Reserve (Reserve Officer Survey Questionnaire) should expect to be transferred thereto unless a contrary choice is indicated before 31 December 1948. These officers are urgently needed. If you are one of that group notify the local unit instructor or Senior Army Instructor at once of your (a) availability for assignment, (b) desire to participate in the ORC program, (c) rescission of your expressed preference to be held on an inactive status.

Detailed information is available at all offices of ORC—Senior Army Instructors and unit instructors.

OUR ARMY IN THE WORLD SITUATION TODAY*

by The Honorable Kenneth C. Royall

[EDITOR'S NOTE: Although at the time of making up the table of contents for this issue, more than six weeks have elapsed since the delivery of this address of Secretary Royall's, the JOURNAL feels that its message is applicable in the present instance and that in any event our readers should be vitally interested in the statements of policy which it contains.]

SOME months ago when I announced the subject of this talk, I hoped that world conditions would be in a more tranquil state than they are today—a state that would at least admit of a relatively long-range discussion of our Army program. As the weeks went by with the Berlin situation continuously under discussion with Russia, I began to doubt whether I could talk about the world situation at all without running the risk of affecting in some way the important negotiations in Moscow and Berlin.

But now we have at least reached a stalemate—a stalemate which will probably continue until the United Nations has acted. Under these circumstances I am able to discuss with you to some extent the general world situation as it relates to the needs and missions of the Army at this time and in the immediate future.

At the outset, I would like to make it clear that neither the Army nor any of its civilian nor military officers determines our national policy toward other nations—whether that policy be for peace or for protection against war. Those determinations are for the State Department and the President.

And I take this opportunity to say that in my opinion their decisions—often made after consultation with representatives of both great political parties—that the decisions of the State Department and the President have been wise and courageous—that these high officials have performed a truly remarkable task in averting war for ourselves and others—averting it without sacrifice of our rights or our principles. I do not believe that history has afforded a finer instance of diplomatic success under conditions of comparable difficulty.

The Army has been happy, when requested so to do, to advise with the State Department on the questions in Berlin and Moscow—and to assist in carrying out in our particular field of occupation the national policies which have been determined on.

In order properly to perform its duty in this field the Army must evaluate the world situation as it is and as it probably will be—and not as we would want and hope it to be. For its peacetime tasks the Army must arrive at the best available assumptions. And in planning for the responsibilities which would be imposed by war, the National Military Establishment, including the Army, must estimate both the tangible and the intangible factors of "whether," "when," "where," "how," and "what."

Let me assure you now, as I will again, that in my opinion—a truly humble opinion—war is not imminent. In absence of some accidental or unintentional occurrence, I do not envision a war in the near future, if we remain strong and prepared enough to convince the world of our ability to meet successfully—and to win—any conflict which might be forced on us.

But we must realize that the determination of war is not in our hands but in the hands of a few despotic and powerful men—men who may or may not be representative of their nations. And it is the timing only, and not the ultimate purpose of these men that is uncertain.

For the Communists of the world's leading totalitarian government tell us—tell us time and again—that the objective of Communism is to establish and operate a world-wide system of Soviet-dominated Communist governments—a world empire. Nor do they make any secrecy as to how this is to be brought about. It is by world revolution. Karl Marx, the real father of Communism—to whose doctrine Lenin and his followers subscribe—Marx declared: "Force is the midwife of every old society pregnant with a new one."

And we have seen the workings of this plan unfolding before our eyes, as Communism's dark shadow has spread over Europe, destroying, by steps short of war, the independence and democratic character of a long list of nations, known to all of us.

Emboldened by these successes—successes accomplished by fraud and by sneeringly camouflaged force and oppression—so emboldened, the Communist hierarchy sought to apply pressure tactics to America and other nations—by imposing an illegal and totally unjustified blockade of the rail and road traffic between Berlin and the Western zones of Germany.

Here again, typical of all totalitarian aggression, excuses were offered—excuses which found support neither in sincerity nor in recognition of obligations nor in simple veracity. Their approach is that of the still existent legal species—the shyster lawyer. In this case it is an international shyster that is operating.

The blockade was first explained on the ground of

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*From an address before the National Guard Association.

"technical conditions." And when this pretext fell by its own weight, the Soviets gave as an excuse the proposed three-power government in the Western zones—a plan which the Soviets well knew to be the necessary result of their own intransigence in the Allied Control Council.

Then they shifted their "alibi" to the question of Western currency reform and its application to Berlin —although here again the Soviets knew that they themselves had turned down the proposal for a four-power German currency—and had also rejected the use of their own Soviet currency in Berlin if used fairly and under adequate safeguards.

A wise old farmer in my state once said to me: "Don't never do no business with a man who don't mean to do right." But unfortunately our government has not been able to follow that rule. In a rapidly contracting world the interests of peace have made necessary an effort to deal with the Soviets on the Berlin situation as well as on other matters.

This effort has been as hard as it has been disappointing. A recent agreement in Moscow to remove the blockade merely served as an excuse for the Soviets to seek in Berlin an additional blockade —this time on the air lift. Another agreement for Berlin trade and for Soviet currency in Berlin under four-power control was perverted to a Soviet proposal to give to its agents such unilateral power over currency and trade that they could, if they wished, force us out of Berlin in a matter of weeks.

The Honorable Kenneth C. Royall, Secretary of the Army

Of course, these tactics have not succeeded this time, but they have created a danger to the peace of the world. Hence, we have referred the Berlin matter to the United Nations. We have announced our determination in the meantime to stay in Berlin, and this we intend to do.

The Berlin situation has been outlined to you because it clearly characterizes the Communist attitude which the National Military Establishment must take into account in its plans and preparations, and which the Army has to deal with in peace as well as in readiness for a possible war.

One present peacetime activity of the Army, which is important and to some extent unique, is our occupation duty. Three years and more after the fighting of World War II stopped, we have three hundred thousand soldiers—and twenty thousand Army-employed civilians—engaged in these duties on foreign soil and many thousand others in support.

These occupation duties of the Army are spread across the globe—Germany, Austria, Trieste, Japan, Korea and certain Pacific islands. The area occupied is about that of the United States, and the population—140 million—is almost as great as ours.

These Army forces are peaceful emissaries of a peace-loving nation—not war tools of an aggressive and selfish nation. The lands they occupy are not merely conquered, they are truly liberated—freed from totalitarianism and all that it implies.

We are seeking to keep them free—to substitute democracy with its attributes of personal freedom, with its hope for a fuller life and a finer sense of individual dignity and decency. And we are moving to rebuild the economy of those countries, so that they may become self-supporting—and strong enough in every way to take their place among nations of the world.

The Army is proud of the signal success which occupation has achieved and is achieving. We are proud of our leadership in those foreign lands—General Clay and General MacArthur and General Hodge and General Keyes. We are proud of our men and officers—and of our civilian employees, who have handled such trying situations—have handled them with cool courage and without truculence.

The Army has other collateral tasks around the globe, including military missions which, in Greece and Turkey and China and elsewhere, are helping both to build up the peacetime strength of other nations, and also to advise and counsel them as to their military defense needs.

All these activities—as important as they are and as many men and dollars as they involve—are in a sense removed from the Army's primary mission. This mission is to serve as a part of the National Military Establishment in defending our nation and its principles against any warlike attack which may be launched against us.

For this purpose we again need troops outside our continental borders—in Alaska, in Hawaii and Guam, in Panama and the Caribbean, as well as in the occupied zones.

But we must also have troops here at home—antiaircraft and other units to protect against attack by saboteurs or even by a possible airborne or seaborne enemy. And there is vital need for a mobile striking force large enough and flexible enough to meet the urgent and varied defense requirements which would arise if a war should suddenly come.

We know today that the Soviets maintain more than 4 million men under arms and support a military establishment that would cost America 35 billion dollars a year. And with no threat of aggression against Russia and no strong nation on its borders, we know that this force is being maintained for some future purpose other than defense.

We do not suggest any such Army for America. Consistent with established American policy, we seek to reduce our figures to the minimum—to the barest minimum needed to meet the uncertain conditions existing in the world today. We believe that bottom figure is 900,000 Regulars, including one year trainees. Under present plans this figure will be reached by next June. We now have 625,000.

The 900,000 will give us 12 Regular Army Divisions at home and abroad, plus supporting artillery, armor, antiaircraft, engineering and service units, and in addition, will provide antiaircraft protection for our cities and important installations, including particularly, atomic plants.

This proposed Regular Army—even when supplemented by the presently foreseeable National Guard and Organized Reserve—all of this is not a guarantee of full protection of our nation. We are still taking a calculated risk—a risk which for wise financial and economic reasons we must assume.

The President has wisely announced a national defense budget of 15 billion dollars for the next fiscal year. In the absence of some greater emergency this limit cannot be exceeded. The rising costs of equipment and supplies of every character and the necessary increase in salary scales materially reduce the national defense structure which can now be bought for even this large amount of money.

We cannot hope to attain the ideal for the Army or for any of the other components of the National Military Establishment. In allotting the available funds we must make choices—choices which will not be entirely acceptable to anyone, but which will give the best over-all defense for the money that is at hand.

There must be an allocation for a sufficient and competent National Guard and an effective organized Reserve. The Regular Army is, of course, our first line of defense and will serve as a nucleus for expansion in time of war. But the Army fully recognizes how dependent it is—and ever has been and will be—on the fine service of the civilian components.

From the standpoint of the National Guard, not only are we including 6 selected divisions and supporting Reserve troops in our initial wartime force, but we also are counting on the maximum National Guard aid—and Reserve aid—in the successive stages through which our Army will develop in the years ahead.

There is one thing we must all bear in mind—Regulars and civilians soldiers—that we are members of a single team which cannot succeed without cooperation. Rivalry for the sake of rivalry, or for the sake of personal or unit advantage, will only undermine the whole structure. If we never forget the objective—the objective of adequate national defense—then the entire Army will grow in efficiency as it grows in size.

I talk of a war which I sincerely hope will never come. And, against the lowering and threatening backdrop of world conditions and realities, our military strength on land, sea and air furnishes the brightest and most hopeful light on the stage of peace.

We have learned from the facts of history that we cannot with safety walk unarmed through international uncertainties, with reason to be unafraid merely because our hands are clean and our intentions honorable. Such an attitude would today constitute an engraved invitation to disaster, a gilt-edged passport to a war of imposition.

Finally, I need not remind this group here that the adequacy of the entire Military Establishment is dependent upon the opinion and the support of all America. Our Army is a people's Army, delegated by the whole nation to do a job for the whole nation. In a democracy such as ours, the Armed Forces are just as weak or strong as the people will them to be.

And so it is that in other nations America's war potential is in large part judged by the expressed attitude of our people here. It is to me a matter of deep concern when men of prominence preach unrealistic doctrine of pacific weakness—of faith without works. It offends me when I realize further that the faith they preach is a synthetic faith—with personal and partisan ambition as its catalyst.

There can be no doubt in the minds of any reasonable man that the preachment of one of the candidates for the Presidency has strengthened the hands and wills of our enemies, and has added to the difficulties in Berlin and elsewhere—has added one more element of uncertainty in an already disjunctive world—has hurt the chance for peace, not helped it.

Nor do I have patience with the second-sighters who, without ever having had any responsibility for the decisions, rush to tell our officials what they should have done. These second-sighters do not commend themselves to me either by their approach or by their motives —or by their accuracy. So far as I have been able to see, the courses which they propose by hindsight would have enhanced our difficulties and would have more seriously endangered the peace.

If these men of influence who criticize the past really want to help, let them make realistic suggestions—and on-the-record suggestions about the present and future. No purpose can be served by carping criticism of things behind us except to weaken confidence in our national leaders at a time when that confidence is needed not only at home but across the seas.

I bespeak from this organization and its members a full and wholehearted support for our national policy and for the military means which support it. As for myself I have full confidence that, if we can continue our policy of fairness, firmness, firepower and faith—I have confidence that in such event—despite the gravity of conditions and despite ruthless forces afoot in the world—we can continue to have peace in the period which lies immediately ahead.

FROM ARMY HISTORICAL RECORDS:

FIRST BLOOD!

An account of the Action of the 41st Tank Battalion in the Battle of the Bulge

THIS is an account of a tank battalion "task force" which refused to be awed by the power of Von Rundstedt's breakthrough. Attacking under severe handicaps, and at a time when other troops in the area were either stopped or were defending, the men of the 41st Tank Battalion (11th Armored Division) plunged forward with a spirit which became the inspiration of their associates.

The ever-shifting fortunes of war had so dealt the cards in the closing days of 1944 that the 11th Armored Division was subjected to a dizzying series of changes in orders which turned it from the Le Havre docks to Cherbourg, there to plan the further containment of the enemy forces in the St. Nazaire area; then, before the debarking was half completed, the swift thrust of Hitler's *panzertruppen* in the Ardennes caused another about-face and sent the columns of the 11th hurtling across France into the Bastogne area and into a situation, the import of which was only dimly understood by the merest handful of officers.

It was a bitter dose to take as one's first taste of medicine. The headlong dash to the assembly areas, the terrible uncertainty of the general tactical and strategic situation, the biting zero weather of the Ardennes highlands, the forbidding darkness of the forests; all are familiar factors to the many divisions and separate units which took part in the Battle of the Bulge. Almost the sole favorable factor was the surprisingly good tank ground which lay between the patches of rolling woodland.

In its advance, the 11th had been held to strict radio silence. In view of the fact that a large number of the radios had been issued immediately prior to departure from England no time was available for tuning and otherwise getting the sets and nets in shape for combat. On top of this, the division was committed to action even while its rear elements were closing in the Bastogne area. In effect, this resulted in a less than 50% effective communications system on the first day of combat and was no doubt the greatest handicap under which the troops operated.

On arrival the men of the Eleventh quickly absorbed the full import of events. The valiant 101st Airborne was holding out in Bastogne, its siege having been broken by the swift action of the 4th Armored Division to restore its supply lines. But the 4th was immediately withdrawn and the only brothers-in-arms which were visible to the newcomers were the plucky remnants of CCA of the 9th Armored Division, holding just west of the town of Bastogne. The Germans were still very much on the offensive with, as later reports showed, two divisions engaged in pressing southward to widen the flanks of the Bulge salient. However, this pressure worked against them in the end, for whatever may have been the adverse effect of radio silence on operations of the 11th it had served to keep secret the imminent attack of the Division and a headlong meeting engagement ensued in which the Germans were unquestionably surprised.

As matters stood, it fell to the lot of the 41st Tank Battalion (reinforced) to bear the brunt of the attack of the entire division. Acting as the left of a two-column task force of CCB, the battalion, led by Lieutenant Colonel Wray Sagaser, displayed a ferocity and a tenacity of purpose which made it responsible for the major gains of the entire division during the Bulge operation.

The JOURNAL staff was able to find in the files of the Historical section of the AGO an account of interviews with the battalion commander and members of his staff which needed little or no editing to bring out the problems with which many other similar commands were faced during those trying times. In the paragraphs which follow, the thread of narrative will be taken up by the historian of the day.

* * *

The battalion was in top-notch shape when it went into combat, despite the rugged, swift march across France. Equipment could hardly have been in better condition. The men had time to prepare certain improvements while in England. They built rails around the outside of the turrets; constructed luggage carriers on the rear decks and were thus able to put all their bedding rolls and field bags outside of the tanks, which made for more efficient work during combat. They were able to cut the sides off the fenders to make a place to hang the track extensions in such a way as not to sling mud on the sight of the driver. They put hooks on the rear of the turrets in order to hook down aerials. These were just examples of some of the improvement made mostly developing from observing other divisions already in combat. The battalion was almost up to T/O strength when it went into combat, being short about 12 men, each company being short not more than 3 or

4 men. Shortages were due to last minute AWOLs and a few foot diseases. Most of the men were in excellent physical shape.

As to equipment, there had been some difficulty in obtaining enough overshoes. But the men were up on their bedding, combat boots and other personal equipment. About 1/5 of the combat load of ammunition had been drawn in England. Advance elements of the battalion had made arrangements to pick up the rest en route. By the time the battalion had arrived, it had a complete combat load.

The battalion closed in the Bastogne area on the evening of 29 December at about 2330, and word was immediately received that an attack was to be made the following morning. None of the battalion staff was very much pleased at the news, inasmuch as the battalion had just completed a 120-mile march that day. There was no opportunity for advance reconnaissance, for it was already after dark and the move up was to start before daylight. There was opportunity only to consult a few maps. Cannon had to be boresighted after the approach march was under way.

It had been planned to get under way at 300600, but the battalion actually left at 0615 because of congestion on the main highway to Bastogne. There was no activity on the way up, but the LD (vicinity Morhet) proved to be in enemy hands as a result of an enemy counterattack against CCA of the 9th Armored Division the preceding night. Accordingly, a nearby road junction was selected as the LD, with the axis of advance Morhet-Lavaselle. Lavaselle had been picked on the map as the initial objective, but it turned out to be a very poor objective because like so many towns in the area it was in a bowl surrounded by high ground which commanded all approaches and from which the enemy could inflict great damage upon forces attempting to enter the town.

A platoon of the 41st Cavalry Reconnaissance Squadron was planned for use as an advance guard until contact was established, whereupon it would be switched as a left flank guard. However, the platoon got nearly to Lavaselle without establishing too much contact, so it pulled back after 15 or 20 minutes to the Morhet road.

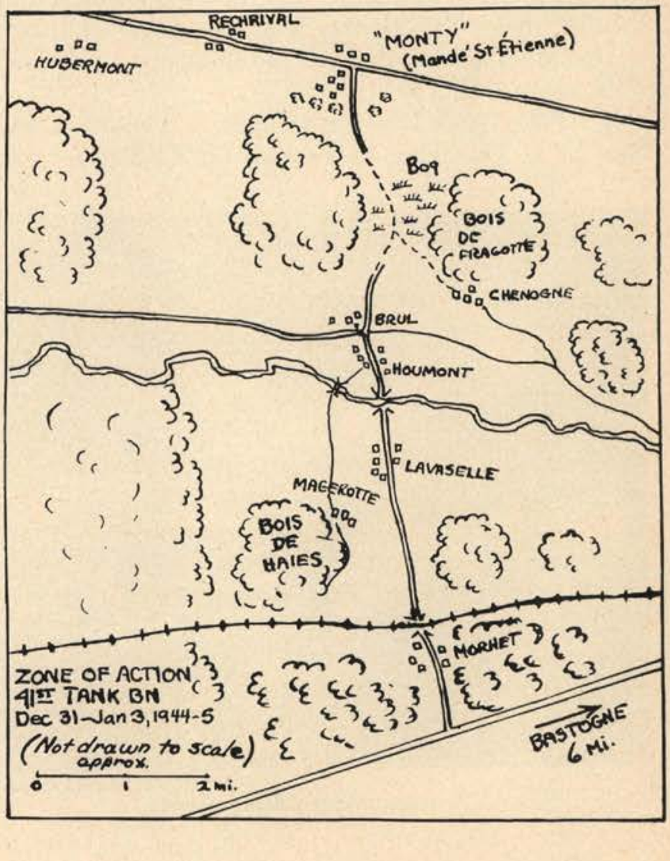
The main force proceeded up the Morhet road with the light tank company leading, one platoon of lights acting as left flank guard. Company A with two platoons abreast advanced between the two trails Magerotte-Brul and Morhet-Lavaselle, with B Company (two platoons abreast) on line to the right of A. C Company proceeded in reserve 300 to 400 yards to the rear. All companies advanced across country. Opposition was not initially very stiff, and consisted mainly of enemy infantry that had infiltrated into the area. Very few casualties were suffered in advancing toward Lavaselle, and the area of the objective was reached at about 1030.

Seeing that Lavaselle was in a hollow and not a logical place for an objective, Colonel Sagaser elected to push his battalion onward to the high ground in the vicinity of Brul and Houmont, which in effect controlled Lavaselle.

There was some difficulty encountered in crossing the stream near Lavaselle. A bridge had been blown, and another bridge had a crater blown in the center, yet was still passable at an easy pace. Some of the tanks crossed the latter bridge, but most of them took a running jump and tried to cross the stream by getting a fast start. Four or five tanks were hung up for a short while crossing the stream, and mortar fire started to descend on the stream line.

D Company met considerable smallarms fire from the Bois des Haies de Magery while going through Magerotte, but for the rest of their journey along the left flank of the battalion, D Company was protected by a cut which enabled them to proceed in defiladed position toward Lavaselle. Both assault companies met a great deal of smallarms fire in both Brul, and Houmont, but A Company pushed a platoon into Houmont and started to mop up the resistance quickly. The Houmont church had been used as an enemy OP, and a German staff sergeant was taken prisoner there, slowing up enemy artillery fire.

Company A of the 21st Armored Infantry Battalion had been attached to the 41st, and the entire force was known as Task Force Poker. The Armored Infantry dispersed around the tanks and went through the towns dismounted to assist in cleaning up. About 75 to 100 enemy troops surrendered in Houmont; they had few weapons of large caliber, but possessed mortars and bazookas and two antitank guns. In view of later developments, the battalion had comparatively



light resistance in taking Brul and Houmont.

After the battalion had entered and organized these towns for defense, the enemy started knocking them with artillery and mortar fire from Hubermont, Rechrival, and the woods northwest of Chenogne. Being the only battalion that had moved out that far, it received fire from nearly every side. What seemed like an artillery preparation for an enemy counterattack decended, but the expected counterattack never materialized. Several casualties were suffered from Nebelwerfer and direct fire weapons, and one company commander was lost when Nebelwerfer fire sheared both hatches off his tank in a direct hit. Most of the casualties were suffered after dusk when resupply necessitated personnel dismounting from their vehicles and congregating in small groups, which made them vulnerable to shell fragments. Total casualties for the first day of operations were 6 killed and about 25 wounded.

When they had set up in position, defensive fire plans were worked out. Lieutenant John Grayson, who acted as an artillery officer on the battalion staff, lined up the six 105mm assault guns and fired them in battery. Regular artillery support, which had been nonexistent at the start of the operation due to faulty communication returned to normal and was used effectively.

The general plan for the advance was to have the reinforced 21st Armored Infantry Battalion (TF Pat) take Chenogne, while TF Poker on the left was to support this force by fire, covering the woods northwest of Chenogne while TF Pat (the 21st AIB plus a company of the 41st TK BN) moved into Chenogne.

CCB was ordered to move up, with its first objective the woods east of Houmont, and then the woods southwest of Mande-St. Etienne. The 21st Armored Infantry Battalion actually moved into Chenogne and then were pushed out.

TF Poker stayed in the vicinity of Houmont and Brul on 31 December, and waited for TF Pat to come up abreast and take Chenogne. On 1 January, TF Pat took Chenogne for keeps.

Signal Corps

A memory-provoking scene.

The massed artillery fire of 12 battalions in a "serenade" preceded the 1 January attack of the task forces on the woods north of Chenogne. Various observers reported that 550 enemy bodies were later found in these woods north of Chenogne, apparently most of them killed by artillery fire. The members of the Battalion were very enthusiastic about the results of the artillery serenade and said that its presence provided a marked contrast to the first day's jump-off when there had been no artillery support to speak of. Timing of all phases of the attack was just about perfect.

The reinforced battalion jumped off at 1100 on 1 January with medium companies abreast, and the light tank company as rear and left flank guard.

This attack was far better coordinated than the preceding day's, not only because of the presence of the artillery support, but because commanders could see the terrain over which they were to fight, and make necessary reconnaissances. C Company started out on the left flank and A on the right flank, the plan being to have them converge and meet at a point of woods from which the armored infantry would comb the area dismounted. The armored infantry followed closely behind the tanks in their half tracks, and the plan was timed to perfection. No tanks were lost and only a handful of men wounded. Many enemy prisoners were captured when the infantry started through the woods; they were men from all branches—air corps ground crews, engineers, former tankers, and others who had been converted to infantrymen. Most of them fought stiffly until surrounded, then surrendered fairly easily.

The enemy defense in the woods apparently never contemplated the use of armor in mass. Tanks were used as tank destroyers and did not move around to a very great extent. Three to five tanks or anti-tank guns might back up a battalion of enemy infantry. These tanks would always fall back in the face of our attack and try and preserve their integrity as long as possible, firing as mobile anti-tank guns.

At about noon on New Year's Day the 41st Tank Battalion tanks reached a point on open ground along the trail running northeast from Houmont. The infantry having cleaned out the first patch of woods south of the Monty-Houmont trail, mounted up on the tanks, 8 or 10 to a tank. There was about an hour's delay, and enemy artillery started falling on the concentration area. The tankers were protected, but the armored infantry mounted on the tanks had a rough time from this artillery fire.

The CCB commander was pressing for the force to drive on to secure a thin line of trees just southwest of Monty and northwest of the main Bois de Fragotte. Hence, between 1330 and 1400, the task force jumped off in a column of medium companies, A Company leading, followed by C with B in reserve. Company B supported by fire from high ground, while the two leading companies advanced by bounds. First blood was drawn just as the tail of C Company had cleared from the line of departure, when a Mark IV tank was knocked out along the Bastogne road. Very shortly a stiff fight developed. The ground chosen for the advance turned out to be soft and boggy. Because of this fact, the enemy did not initially expect a penetration at this point and took a little time to adjust his fire on the boggy approaches. But when it became apparent that this was to be the axis of advance, the enemy trained all weapons in the chosen corridor of approach.

The 3d Platoon of A Company was leading the force in platoon wedge formation, when the entire platoon became stuck in the marshy ground. Direct fire weapons immediately opened from along the Bastogne road and picked off the sitting ducks one by one, virtually wiping out the 3d platoon. Direct hits were scored from the Bastogne road and also from 75mm and 88mm fire which came from the high ground around Mande-St. Etienne. This scotched the entire plan to move across and take Monty. The entire tank battalion then maneuvered into position where they could fire through an entrance to the woods. In this critical period, the task force was handicapped by two things—a lack of sufficient dismounted personnel to protect the tanks; and the terrain, which as well as being soft also hemmed in the approaches on all sides by woods. And the battalion had by now learned that every patch of woods was a potential enemy strongpoint. The enemy had excellent defensive positions and prevented any additional penetration toward Monty on that night. It had been planned to feed the tanks through the gap one by one, but darkness and the ferocity of the enemy resistance prevented such a move.

After dark and all night long on 1 January, the task force heard the sound of burp guns in the area. The tanks backed up into the woods for cover, and their personnel was protected against the artillery in their buttoned-up vehicles. The armored infantry, however, suffered casualties from three bursts which did not damage the tanks because their force was lost. It was most apparent that although it was a good practice for the tanks to seek wooded cover, it would be a far better practice for the infantry to dig in in the open.

All night, artillery fire joined in with the burp guns. The task force on the right sent out numerous patrols, met numerous enemy patrols and there ensued small skirmishes interspersed with periods of silence before more hostile artillery would descend.

The problem of resupply and refueling was very difficult on the night of 1-2 January. About 2400-0100, Lieutenant Edwin Justice, platoon leader of the Reconnaissance Platoon of the 41st Tank Battalion, ran a light tank from the Lavaselle area along the Houmont-Monty trail to see whether it would be clear for the supply vehicles to go through.

Fortunately, Lieutenant Justice hit no mines, but he dragged a road block out of the road and opened the way for the supply trucks after flushing some German infantry out of the bushes; then, in the early hours of the morning, 25 vehicles lumbered down the trail with ammunition, food, water, fuel and maintenance personnel and vehicles.

Signal Corps

That winter of 1944!

During the critical period when the battalion was around the open position between the woods, the enemy could not actually deliver observed artillery fire directly, but any large movement of vehicles in one area was easy to pick up and it drew artillery. The task force felt very insecure in the position, but made the best of circumstances by using a platoon of the 41st Cavalry Reconnaissance Squadron to outpost the Battalion CP and the right flank, while the light tank company outposted on the rear of the positions on high ground.

The platoon of the cavalry reconnaissance squadron also conducted route reconnaissance prior to the jump-off the morning of 2 January. It had become evident that the position in which the troops had halted was most unfavorable and that an immediate advance was essential to the higher ground near the towns of Monty and Mandé-St. Etienne. Considerable movement could be seen in the area of the towns, and shifting of enemy troops, but no observer knew the significance of this movement. Reconnaissance to determine passable ground for tanks was finally completed and at 1500 hours an artillery preparation and an air strike were placed on the towns.

The battalion jumped off at 1600, in a coordinated jump with the infantry on the right. C Company of the 41st Tank Battalion was attached to the 21st Armored Infantry Battalion task force for the operation, while A Company of the 21st AIB remained with the 41st's task force. While B Company of the 41st supported by fire, A Company made a direct frontal assault with platoons abreast.

The artillery and tank fire set the towns ablaze, but it was not until after dark that the combined forces entered Mandé-St. Etienne. After getting into town, a medium tank was destroyed by a direct fire weapon.

There was considerable scuffling with hidden enemy infantry who refused to admit defeat. The enemy remained in the cellars of the town and sniped all night, after the task forces entered about 2000. The only thing to do under such circumstances was to sleep with the enemy and wait until morning to clear up the confused situation.

On the night of 2 January, the enemy was expected to counterattack and try to attack the town. A report was received at 2330 that an enemy armored column was driving down the Bastogne road toward Mandé-St. Etienne. A wall of artillery was registered in front of this phantom column, but it never actually appeared to menace the occupants of the town.

At 0800 on the morning of 3 January, elements of the 17th Airborne Division relieved the task forces in Mandé-St. Etienne, and the battalion moved back to rest area. The staff went over the situation with the officers of the 17th Airborne, and a supply of .30 caliber ammunition was turned over to the elements of the 17th Airborne when the 41st Tank Battalion departed.

Total battalion casualties for the operation from 30 December to 3 January were 112, of which 25 were killed. No light tanks were lost, and 12 medium tanks were knocked out. Replacements on these tanks were plentiful during the period between operations, but no personnel reinforcements were received. Of the medium companies, A had been the hardest hit during the first operation, largely because the 3d platoon of A had been wiped out when it became bogged down and mousetrapped near the woods gap. C Company was in the best shape aside from the light tank company, which had been used mostly for flank and rear guard protection.

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The records indicate that the interviewer classed the conduct of the 41st Tank Battalion throughout its initial action as superior. This classification is not too much nor should it be surprising.

The records also show that this organization and the division to which it belonged were one of the few units remaining in the States in the summer of 1944 which were not gutted by withdrawing trained personnel and sending them elsewhere as replacements. Consequently, the teamwork necessary for the excellent timing shown in the several attacks was first developed and then preserved.

It is also noteworthy that after entering combat practically without radio, the entire communications system was restored in the midst of battle conditions within twenty-four hours.

But perhaps the most important lesson to be gained from this account is the fact that attention to the details of coordination pays great dividends. A "serenade" by twelve battalions of artillery is indeed a lot of artillery fire. But greater concentrations have been fired in other battles without a commensurate return. On this occasion, apparently the troops were on the objective almost as soon as the sound of the last round had died away. As a result, we see an enemy dazed and unable to resist, after hundreds had already been killed by the terrific artillery concentrations. The cost to the attacker: negligible!

A contrast is evident in the attempt to exploit this action. The task force commander displayed commendable boldness in immediately moving ahead before the enemy could recover or shift to meet the new threat. But his luck ran out and his leading tanks bogged down in a narrow passage which, having been in enemy hands, had been impossible to reconnoiter. By the time the situation had been adjusted the enemy had indeed shifted and was able to bring a destructive fire on the narrow route of approach which cost the major casualties of the entire action. Nevertheless, it was a true tanker's choice. For had time been taken out to make a careful reconnaissance, the enemy would have recovered anyway, with the same result. On the other hand, had ground been firm, a very decisive victory would have been scored which undoubtedly would have made the attacks of the next day unnecessary.

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There appear to be many instances of detailed actions such as the foregoing in the files of the AGO. Some of them are so written as to require their continued retention in a restricted or confidential category. The ARMORED CAVALRY JOURNAL staff intends to sift the files for additional printable data, especially where it appears to have a lesson which applies to tomorrow's training. The reader is urged to write the Editor to recommend a search for battle experiences of which the reader may have personal knowledge, or to indicate his preferences as to how material of this nature should be treated.

Keep Us Informed of Your Change of Address

THE PLACE OF ARMOR IN THE MODERN DAY ARMY

by Major General William G. Livesay

FROM AN ADDRESS BEFORE THE ROYAL CANADIAN ARMORED CORPS ASSOCIATION

IT is interesting to note that the development of Armor in the Canadian Army has almost exactly paralleled ours, and there has been close cooperation all the way. Both of us have gone a long way in the armored field in the past ten years. At Fort Knox, they still remember the close association of the fathers of Canadian and United States Armor, your General Worthington and our late General Chaffee. This Association has been continuous, and I am sure it will go on.

For a century and a quarter, our peaceful, undefended common boundary separating two democracies has been the envy of the peace-loving peoples of the world. For 30 years, during which have occurred two wars, we have stood and fought shoulder to shoulder. Today we are even closer, being bound together not only by a common language and heritage, similar customs, and a mutual dependency in many fields, but also by closely associated national defense problems.

I shall point out to you briefly my concept of the place of Armor in the modern-day Army. In doing so, I think it well that we consider first the place of an Army in a modern national defense organization.

I am sure that you will agree that warfare is conducted primarily from fixed land bases. These bases may be for the use of ground, air, or naval forces, or for the use of a combination of such forces. From these, forces sally forth to attack the enemy. Because these bases are so important to the scheme of modern war, they are naturally the primary targets or objectives of enemy forces—air, ground, and sea. They must be defended in order that we may use them or in order that our enemies may not use them to launch an attack on us. The only force that is capable of defending such a base, if it is accessible to the enemy by land is a land force or ground force supported by air. If it is not accessible by land, capabilities exist today to assault the base by airborne operations, perhaps by seaborne operations, or by a combination of such operations. Land forces are needed to help cope with such enemy ventures.

Considering for the moment that it may be possible for air power alone to destroy the enemy's will to fight and to thus reach a decision, the protection of the bases which air power must have, and the occupation mission after the decision is reached, are jobs for land troops.

I am convinced that we shall see the need for land forces continuously so long as mankind commits the folly of engaging in warfare.

Less than ten years ago, when Germany overran France and the low countries, they had less than 2800 operative tanks west of the Rhine River. Today we have set up nearly 3500 tanks in our so-called Type Field Army. We have even placed in or made available a total of about 200 tanks for each infantry division. Thus, we see that in a short span of ten years our Army has virtually become an armored Army. It is significant to note that throughout the world, the Armies of great military powers have gone to Armor to the extent of their nation's economic capabilities.

To us who live in North America, the development of Armor for use in warfare has been a great military benefit. It has enabled us to take advantage of our abilities in production and in mechanical aptitudes to effect decisive action on the battlefield against opponents who are capable of mobilizing far greater manpower. Mechanized warfare best fits our capabilities. We must and will continue to develop this great advantage.

This brings up the matter of tank development. The tank of ten years ago is as outmoded today as is the Model "T" Ford in the automobile field. In sight are tanks that will have revolutionary improvements in many fields—engine power, gun power, driver control, power transmission, fire control, etc. Development in the armored fighting vehicle field must and will continue.

I am unable to consider the question of Armor in the modern-day Army without considering the question of military teamwork. When we think of Armor, we think of teamwork. It wasn't many decades ago that we had what was known as land wars and naval wars. We had battles that were known as infantry battles and cavalry battles. That situation is practically nonexistent now, and will exist to an even lesser extent in warfare of the future. Now in planning a military operation, it is necessary to consider teamwork between allies; and teamwork among air, ground, and naval forces; and within the Army itself, we must develop fully the teamwork among infantry, artillery, tanks, and engineers and service support elements. Warfare has become very complicated. Certainly we will not have tank battles alone of any great scale. Battles will involve all arms.

Before the last world war, we used to speak about the infantry-artillery team; now that team has given way to the infantry, tank, artillery, engineer, and tactical air team.

To launch a modern campaign requires careful and detailed planning. That planning extends not only throughout the combat zone, but into the communications zone, into the Zone of the Interior, and there into the mine, the factory, and the farm—all elements of the population are involved. In the future, the whole population will be on the nation's defense team.

Teamwork throughout is important. Those of us who are closely associated with Armor must not lose sight of that essential teamwork, for teamwork is especially vital to armored operations.

Many of you recall that in the early days of armored divisions, the percentage of tanks was very large as compared to the infantry component. We have found that to balance the team, nearly all components other than tanks needed to be increased in our armored division. The infantry component has been increased from nine companies to sixteen. We have also increased the artillery, engineer, and service components of the armored division.

We have also increased the tank component of the infantry division.

The question that may well follow is whether we ought to have a common or universal division, since we have increased the tanks in the infantry division and the infantry in the armored division. To that question, our answer is no. While it is true that the roles of these two divisions overlap, primarily they do have separate roles and two types of divisions are essential to a modern Army.

In Texas, they say that only fools and newcomers predict the weather. Probably in the field of military operations the same saying should apply when one attempts these days to predict the future of warfare. However, we must forecast the future the best we can, or else we would be unable to make future plans.

Therefore, I shall briefly summarize what I believe to be the future of Armor in so far as the next few years are concerned. In doing so I am not unmindful of the effect of the atomic bomb and guided missiles on military operations.

First, Armor will continue to be an increasingly important component of the army team.

Second, Tank development will continue, and we will see greatly improved armored fighting vehicles of all kinds.

Third, The need for teamwork among allies in the national defense team, and within the Army will increase in importance.

Fourth, Tank units will continue as components of the infantry divisions of the modern Army, either as organic elements or as units capable of being attached to such divisions.

Fifth, Modern armies will continue to have armored divisions to be teamed with infantry divisions in a corps or field army framework.

Officer Veterans of the First Cavalry Division who would consider a return to active duty for a tour with their old outfit may explore the possibilities and receive advice by writing to the Chief, Cavalry Branch, Career Management Group, P & A Division, The Pentagon, Washington, D. C.

Major General William C. Chase, Commanding the "Famous First," urges all concerned to plan a return to the ranks for as long as possible and as soon as possible.

Have We Perfected the Air Strike?

by Colonel Wesley W. Yale

Experience of the past and development of the present point up the needs of the future in the important area of air-ground coördination. Our departing Editor bows out with an appraisal of a significant subject.

WHEREVER Armored men gather, the talk sooner or later turns to the matter of tactical air support. To the tanker and the Armored Infantryman of World War II an air strike only too often meant the difference between life and death or at the very least the turning of possible defeat into victory. On the other hand, the splendid communications system of the armored divisions rendered them much easier to work with, from the airman's viewpoint, than almost any other type of troops. Pilots were comforted, too, by the relative ease of identifying friendly panelled tanks and the ability of Armor to furnish on short notice a covering fire against hostile AA weapons delivered in support of an air strike. For these reasons, the tanker and the airman in the ETO probably forged closer bonds than other types of combatants in the ETO and elsewhere.

Nevertheless, it would have been interesting to see how Armor and Navy Air would have functioned together in like circumstances. The Navy system of tactical air support differs in some respects from that employed by the Army air in the ETO. These points of difference, as set down here, may prove a desirable thought-stimulant to those who are familiar with ETO air-ground operations and those who recognize the vital need for even closer cooperation between the arms in wars of the future.

Let us hasten to say that there is to be no criticism, even implied, of the fighter squadrons who cheerfully braved weather when they "should have stood in bed" in order to blast opposition from the tankers' path during the far-flung battles which stretched from Normandy to the plains of Central Europe. Many of our friends in Army and Navy air have voiced their approval of the simple thoughts which we wish to bring out. And on the streetcar of Ideas, there is always room for one more.

Some thoughtful leaders who served with Armor profess to see a considerable difference in air support of troops which are fighting in march column on a road, as opposed to the support of those which have been deployed into action on a relatively broad front. Certainly it is far easier for a pilot to pick up the contending forces on a road and to identify the targets to be attacked by reference to the head of the column. Once the deployment has taken place, however, identification becomes difficult. The opposing troops are hidden by foliage, by buildings or by the blending colors of vehicles, men and terrain. Dispositions are often confused, salients in the line being apt to cause an air strike against friendly troops. Moreover, the ground troops themselves often become uncertain as to their own position on a map, especially in rolling and wooded country where good roads are infrequent.

It will be a great mistake if we are content to bask in the comforting notion that air-ground cooperation in the past was all that we might desire in the future. If the next war is to be fought under the same conditions, perhaps that might be so. But we are faced with weapons and explosives whose power is magnified many times over those of 1944-5. Fighting on a road will become very costly, even granting that the hostile air force has been overcome in the early days of combat and there is little to fear from enemy air action. It seems as certain as anything that can be foretold that a premium will be placed on dispersion and mobility.

Dispersion and mobility directly affect the control problem. And unless tactical control is of a superior order, the prospect of successful air strikes is dim indeed. Therefore there is no time like the present to perfect air-ground technique.

Both in the training period of World War II and in combat itself a good many devices were contrived to simplify the aerial identification of ground targets. The simplest was of course that of designating an objective by means of map grid coordinates, with final identification of the target itself left to the airman. When this proved generally inadequate the target was pointed out to the pilot by the radio operator of the air-ground party by reference to prominent landmarks—or the target could be outlined by colored smoke bursts from artillery, tank cannon or mortars.

It must be admitted that these and other devices for identification were not all that could be desired. The maps were not quite good enough, and the smoke and artillery bursts dissipated quickly even when they were accurate enough to outline the target.

The tactical air pilot in the ETO covered hundreds of miles of front. The simple laws of supply and demand and economy of force required the air squadrons to be rigidly controlled by radio so that they could be dispatched on a few moments notice to any division that required their aid. They were like a city fire department in that they could not be everywhere at once in anticipation of a fire breaking out. But unlike the fire department they did not stay in the engine house. The demand was always great enough to require a mission somewhere, and always a move to another critical area as soon as the first mission was accomplished.

Contrast this setup with the war in the Pacific. There the conflict was comparatively localized—an attack on an island or a beachhead. The air support took off from a carrier or a nearby base and then flew in a circle or "orbit" in the area of battle until an air strike was called for by the ground troops.

Nevertheless, once army tactical air arrives in an area on call, the conditions are then similar to those which confront Navy or Marine air "on orbit" at least until their immediate mission is completed. However, in the ETO, tactical air habitually arrived in a division area by using a map of a scale approximating 1/300,000. This scale was not much use when it came to identifying ground targets, unless the troops supported were in a column on a road, making conditions quite different from those in the Pacific Islands.

Even when using maps of a scale appropriate to conditions, the ETO pilot patrolling the front of one or more Armies sometimes occupied a cockpit which had the appearance of a receptacle for the Sunday editions of all New York newspapers.

The solution of the problem of maps is not difficult. A pilot must have a small scale map which shows a lot of country and which enables him to leave his home base and reach the areas of one or more divisions he is scheduled to support. On arrival he must have a much larger scale map which gives in detail the landmarks in the zone of action of each division.

Air and Armor coördinate on Luzon during the late war.

The command and staff of the divisions go to great trouble (or should do so at any rate) to mark probable artillery concentrations over points that might be occupied by the enemy along the route or zone of advance of the division for each succeeding day. These points, or concentrations are numbered and the marked maps distributed to key commanders and artillery commanders and observers. When enemy resistance is located it is only necessary to call for the appropriate numbered concentration or for a concentration by reference thereto.

In the ETO there were entirely too few divisions which took the trouble to do the same thing, with the obvious modifications, for air support. Yet it is every bit as important.

In performing the same task for the air support units the division staff of the future should bear in mind the physical problems of the squadron leader or the pilot commanding whatever air unit is designated. He is encased in a tiny cockpit, he has already a map which takes up a great deal of room and which is of use only in reaching the division area, and he will be travelling in the future at speeds much greater than those of World War II. The least that can be done for him by the division staff is to provide him with a map of the division zone of action, mounted on a board about 18 inches square and prominently marked with the code name of the division. If the division operations map cannot be accommodated on the 18-inch square board, then two or more sections so mounted should be provided.

The pilot simply puts the maps in a convenient rack in the cockpit and when called navigates from base to the division area with his regular air map. In the event that the call has come from the Umpteenth Division whose call sign is DOGFACE and whose air operations maps have been mounted and taken to Headquarters of Tactical Air the previous night, he pulls out the DOGFACE board as soon as he reaches the area and studies it for landmarks. If there is more than one map for DOGFACE the call will be made for DOGFACE ONE or DOGFACE TWO, etc.

At this point the pilot is moving at terrific speed and may be subject to AA fire from enemy ground positions. He wants to perform his mission and get out as fast as he can. The division staff can help him do this by marking the potential air strikes in accordance with the layout of the most prominent ground landmarks. If possible a half dozen points should be selected and lightly covered over in red as well as being numbered or lettered. The other potential air strikes are numbered in hundreds.

In calling for an air strike the ground unit simply asks, through the air support party, for B-126, for example. The pilot glances at his board at the red-shaded B landmark, identifies it on the ground and then picks up the 126 strike which will of course be nearby. Strikes called on points which have not been previously selected naturally are more trouble but can be identified by reference to one of the selected strikes.

This device is obviously just something to enable a pilot to pick up a target quickly in a fast plane which is subject to AA fire. Conditions may be a bit different and may warrant the designation of a strike by coordinate methods.

Navy air has used a very simple coordinate system which might well be taken over by our ground troops where enemy air and AA are relatively inactive. This involves only the numbering of each 1000 yard (or meter) grid square on the map from left to right and top to bottom. Each grid square is further subdivided into twenty-five squares which are lettered from left to right and top to bottom. Thus, 125-Easy would be a 200-yard square in the upper right hand corner of main grid No. 125; 156-Mike would be a 200-yard square in the center of the main grid No. 156, etc. For security's sake a different numbering scheme could be used on successive days such as using only odd or even numbers, multiples of 5 and so on.

However, the Navy does not depend on the chance that a squadron leader may fly over the target area at 400 miles an hour or better and promptly pick up a spot on the ground, whether his map shows red, black or blue shading. The Navy recognizes the need for a middleman in the operation, one who is himself in the air and who is in radio contact with the incoming fighters and with the air-support parties on the ground.

Much of the system of operation of this individual, whom the Navy calls an "Air Coordinator" involves classified material and will not be discussed here. What we shall do, however, is to speak of the air support of Armor when it is operating on a broad front and suggest what might be done to give a better means of coordinating the airman's ability to pick up a target designated by the ground troops. The suggestions made are not necessarily based on the details of the Navy system since the writer is actually unfamiliar with those details.

In World War II, as we have seen, in spite of all that was done with colored smoke, prepared maps and the like, the conditions which faced the average pilot were not conducive to his immediate identification of the target selected, at least in the ETO. That the great majority did in fact ultimately hit their target was simply a tribute to the skill and courage of our Air Forces. Now we are proposing to require the same or better accuracy with the added handicap of faster airplanes.

The presence of an intermediary airman such as described by the Navy term "Air Coordinator" seems an obvious essential. We visualize an Air Coordinator as a member of what might be called the "Air Coordinating Detachment" and which in turn is part of the regular Tables of Organization of a Division, or, preferably an Army Corps.

The Air Support Officer of the 6th Armored Division checks a map during Third Army Operations in France in 1944.

The Air Coordinating Detachment should have sufficient matériel and personnel to keep at least one airplane and crew aloft during the entire time that the Corps is operating. This plane should be capable of operating two radio nets simultaneously—the air-ground net of the unit supported and the net in which the supporting aircraft will be operating.

The speed and ceiling characteristics of this plane, as well as its armament, are properly the concern of the Air Forces. The ground units would expect suitable characteristics consistent with its ability to cruise in the area of operations and to identify readily all landmarks and potential air strikes designated by the ground troops. It should also be fast enough to lead, when necessary, fighter aircraft directly to the designated target.

The duties of the Air Coordinating Detachment are seen as those of assisting the Corps or Division Air Officers, or the counterpart of G-3 Air, in an advisory capacity during the planning stages of an operation, and later exercising actual supervision over the sifting of air requests during action and over the execution of air strikes.

Nothing in a setup of this kind changes the present system of air parties working with the different echelons of ground troops, any more than there is a need for a change in the operations of artillery forward observers. The air parties should continue to be attached to Combat Commands or even lower units and to transmit their needs to the Air Coordinating Detachment.

However, control over air support in armored divisions has probably been, and will be more centralized than that necessary for infantry in the past. In almost every situation the Combat Command Commander or his staff is in constant touch with units in contact with the enemy. When a need for air support arises he is immediately aware of it and can take action personally through the air party which accompanies his headquarters. In Infantry units, troops tend to get beyond control more frequently, communications suffer and a need for air can arise which even a regimental commander is unable to oversee.

In past practice an air request by an armored unit could be made over the command net to the Combat Command where it could be immediately relayed by the VHF radio of the air-support party to planes in flight, or, through the air support personnel at Division headquarters to the aircraft base. All of the air support personnel have in the past been Air Force men, and should continue to be in the future. They were usually pilots who took two weeks off flying duty for the purpose and were thus thoroughly familiar with both the air and ground requirements.

The Air Coordinating Detachment will simplify the task of the air support parties to a considerable degree. In the first place the Detachment Commander should require divisions which he serves to prepare air strike plans and air strike maps which, when proficiency has been attained can be taken directly to the Air Base from whence will come the aircraft which are to support the operation.

The Air Coordinating Detachment then should provide air reconnaissance of the area which will permit an identification of potential ground targets prior to or as soon as possible after the commencement of operations. Once action has begun the Detachment keeps a plane in the air as long as requests for air support are a possibility.

Air support parties transmit all requests to the Coordinator, who is on station in this plane. There should be no contact between the ground parties and the combat aircraft whatever, although if radio contact with the Coordinating plane is lost, there is the obvious recourse of going through the command nets for a relay.

The Coordinator in the plane then calls the base, or contacts aircraft in the air to execute one or more strikes as called for. When support aircraft appear in the area the Coordinator immediately takes control of them through the assigned radio net. Probably he will have them fly on orbit at a point well beyond the range of hostile AA batteries while he has the air unit leader accompany him forward to a point where the potential targets can be identified. Once targets are identified, ground troops are notified to prepare for the air strike so that advantage can be taken of it. Possibly artillery may be asked to fire a concentration to protect the aircraft as they are coming in. But the Coordinator does not blindly direct as squadron here or there. He judges just how many of what type airplanes are needed to execute a particular strike and thus may divide a squadron into two or three missions which under the old system would have been able to carry out only the principal mission called for by a division at any given time.

Moreover, in situations where enemy air is active the Coordinator may divert all or part of the support aircraft available to the attack of hostile craft. Further, he is able from his position aloft, to judge better which of the potential air targets are more properly to be handled by artillery fire rather than by air.

After the execution of the strikes planes return to their orbit until released by the Coordinator.

This system obviously permits much greater economy of force in the use of combat aircraft, much better selection and identification of targets, and better control over aircraft operating in the area, particularly as to the timing of their attacks in conjunction with movement on the ground.

It is possible that the Air Coordinating Detachment might be made up of other than Air Force personnel. Improvement in radio facilities might permit the use of L-type planes on duty of this kind. However, there will be trouble in finding substitutes for the necessary combat aircraft experience which it is evident that personnel on coordinating duty should have. Likewise, the need of occasionally leading the attacking force to the target might preclude the use of light planes.

This discussion summarizes very simply. It is plain that our present ideas of air-ground cooperation are sound. It is also evident that improvement is needed in the field of selection and identification of suitable air targets and in the control of aircraft operating over ground troops.

The ground troops can help the airmen by the provision of carefully thought out plans, drawn up with a knowledge of air capabilities and in conjunction with the advice of air officers. Staffs can provide the pilots with maps of the area, on a scale suitable for local use and marked with potential targets.

But the provision of an individual or a unit to carry out the duties described above for the Air Coordinating Detachment, and based in general on the Navy idea is advanced here as the greatest contribution which can be made for the perfection of the air-ground technique of the future.

A subscription to the Journal would

make an excellent Christmas Gift.

EDITORIALS

And Again . . . New Editor

It appears that editors are practically a dime a dozen these days, for effective with the release of this issue another change in the JOURNAL masthead will take place. At the time of taking office your present editor planned to be with the magazine for an extended period. However, family health has forced a change in scene and thus the chair is relinquished at the very time when things were getting interesting.

The new JOURNAL editorial policy is unquestionably popular if we are to judge by the amount of laudatory mail and the absence of brickbats. Some people even like the contents. We admit all this because there is no need to take any credit when the market is flooded with highly readable material from authors who know, or at least ought to know their business.

We have completed an organization in the field whereby unit representatives have undertaken to canvass their areas for new subscriptions, for articles and for opinions as to how improvements in the JOURNAL can be made. Needless to say the subscription campaign is barely begun. We need 1,000 to 2,000 new readers, and quickly. But there is room for encouragement when one sees the awakening of interest in areas such as Los Angeles where live wire Reserve officers of the caliber of Colonel J. T. Roberts (commanding the 13th Armored Division) are beating the woods. We hope ultimately for 1,000 subscriptions from the Los Angeles area alone.

Colonel Claude O. Burch, Cavalry, now takes over the editor's chair. He brings to JOURNAL readers a wide and long experience with Armored Cavalry dating from the earliest days at Fort Knox. His easy and friendly personality will be welcomed in the editorials, reconnoitering, and in other pages where the staff can make their presence felt.

We wish to thank all subscribers, readers and commanders, in addition to the Staff of the Armored Center and Armored School, whose ready and generous response to appeals for aid have shown fine results in the subscription lists. And hearty thanks and good luck to the JOURNAL staff for a future which grows more promising day by day.

Season's Greetings

Our bimonthly status puts us out a bit after Thanksgiving, while Christmas and the New Year fall exactly between our last issue of this year and the first one of the coming year.

We take this opportunity to extend the Season's Greetings to all members of the Armed Forces, to the members of our Association, and to our many friends everywhere.

The Annual Meeting of the U. S. Armored Cavalry Association will be held at 8 P. M. on Monday, 17—Jan. 1949, at the Army-Navy Club in Washington, D. C. Officers will be elected for the coming year and such business as may properly come before the meeting will be transacted. All members are urged to attend. The regular notice will go out to all members. Please send in the return card letting us know if you will or will not be there.

Fear of War

Three years ago last May we met the Russians. And what hotcha! The embracings, the dancing, the naz darovia! We can even recall some dancing babes from the Caucasus in the 69th Guards (now there's a Table of Organization for you) who didn't seem too obsessed with saying "Nyet."

One memory stands out of all contacts with Russian troops. Patriotism to the *n*th degree. To see a thousand Russian soldiers singing their wonderful harmonies of valorous deeds and of devotion to Stalin is as inspirational as hearing the crashing chords. It is very obvious indeed that Mother Russia is deep in the soul of every last rank in the Red Army.

We remember the Russian admiration for power and their contempt for weakness in their own ranks, as shown by their feelings toward returned prisoners of war. We recall the petulance which greeted our refusal to trade our Ford convertible for a Lincoln limousine.

All this adds up to our conviction that the present expansion of the Army is something that our Russian friends will admire and understand as the best gesture of peace we could make. It will go far toward overcoming the headlines of a few months ago which stressed fear. Fear of a dozen things, but essentially a fear that we would have to fight.

We have nothing to fear in a military sense except our own moral weakness. The Army which swept over Europe was the smartest and most efficient military machine the world has ever seen. It was something that the Russian common soldier could respect and admire. He did respect and admire it with the utmost friendliness until the strength was dissipated.

Let us despise war and avoid it by every possible honorable device. But let us not fear war, for to fear it in this case will be to invite it. Let us instead re-create a reasonable fraction of the forces of '45 which will give us the quiet confidence which in turn makes a spirit of patience and firmness possible. A nation which is so foolish as not to do this does not deserve the friendship of the Russian soldier, and you can bet your last pound of beluga caviar he will not give it.

OUR MISSIONS

CARDED

The U.S. Military Mission In Turkey

by Major General Horace L. McBride

Early this past spring we set ourselves the task of bringing the readers of the Journal the story of our aid and ground missions engaged in the important work of assisting friendly nations. Now, many months later, we have overcome the obstacles of contact, mail schedules and appropriate clearances, and we are able to offer the first of a series. General McBride, Chief of the Military Group of the Mission, gives us the story of one of our key activities in the implementation of the Truman Doctrine.

FOR centuries the strategic importance of the area within the present boundaries of Turkey has been recognized. At no period of history has this area been of as much interest and concern to the United States as it is today. A Moslem nation, a stabilizing force in the Middle East, lying astride the vital waterway from the Black Sea to the Mediterranean, flanking the routes from Russia southwest through the Balkans and southward to the important oil fields of the Persian Gulf region, a neighbor of Palestine, and having common boundaries with both Russia and the Russian Satellite Bulgaria, Turkey has a political as well as a military importance to America never before approached in Turko-American relations.

The chief interest of the United States in Turkey is the maintenance of that country's position as a free and independent nation. Since the modernization of Turkey's armed forces was considered to be the best means to that end, the Congress of the United States in an Act approved 22 May 1947 authorized the President of the United States to furnish assistance to Turkey in the amount of one hundred million dollars. A survey group of military and civilian experts was sent to Turkey in May 1947 to confer with the American Ambassador and the Turkish authorities and to make the assistance most effective. In consultation with the Turkish authorities it was agreed that the bulk of the appropriation was to be used to provide modern military supplies and equipment for the Turkish armed forces. Five million dollars was allotted for the improvement of the strategic highways and the United States Public Roads Administration was subsequently charged with its administration.

The survey group returned to the United States in July of 1947 and submitted their report and recommendations. The organization of a military mission to carry out the aid program was started in Washington early in August. The military mission consists of three groups: Army, Navy and Air Force. The Chief of the Army Group, as senior of the military officers, was designated as coordinator of the military groups. The first task of the groups was to prepare detailed lists of equipment and supplies based on the report of the survey group. Careful planning extending over several months was necessary to achieve the most efficient expenditure of funds. The multiple task of providing supplies and equipment in a program limited in dollars, taking every precaution to insure that the program is balanced to the extent that it gives the greatest benefit to Turkey, and at the same time striving to make the most economical use of surplus military stocks, requires numerous revisions and substitutions. Non-availability of a desired item from surplus stocks requires the substitution of an acceptable similar item which in turn requires a change of other dependent or related items in order to insure a balanced, integrated program. An acceptable list of requirements, approved in November 1947, was designed to make the maximum contribution to the defensive power of the Turkish armed forces.

Recruiting civilian and military personnel for the mission was initiated in August and the first members of the mission were en route to Turkey in September. The advance party in Turkey immediately commenced preparations for the reception and storage of equipment and supplies. The first shipment arrived in October. Concurrently, plans were formulated for the instruction of Turkish personnel in maintenance and operation of American equipment, much of which was new to the Turkish forces.

It was necessary to establish courses for instruction of Turkish personnel in technical maintenance and operation of the aid equipment prior to release of the equipment to Turkish military units. The objective of these courses is to train Turkish instructors who can return to the units receiving the new American equipment and in turn conduct unit schools.

Language difficulty increased tremendously the burden of work. It was necessary to assemble English-speaking interpreters, translators, typists, and draftsmen to translate American field manuals and technical regulations, and to prepare instruction programs and lesson plans in Turkish for each. The lack of a technical dictionary in Turkish made it extremely difficult for translators to agree on uniform Turkish terms for technical words new to the Turkish language. Training of depot personnel presented a major problem. Packing lists in English on each box had to be translated into Turkish, and warehouse personnel were then confronted with the problem of matching a piece of equipment which was new to them with a Turkish term which was also unfamiliar. Fortunately, there are a number of Turkish officers, mostly reserves, who are graduates of American civilian engineering and technical colleges, as well as a smaller number of regular officers who are graduates of American army service schools. These English-speaking, American-trained officers have been invaluable in assisting the mission in the instructional work; without them the task would have been immeasurably more difficult.

It was apparent from the outset that the American courses of instruction must be centralized in order to utilize effectively the limited number of American instructors available. The courses were opened at existing Turkish army schools. Superimposing these courses on the resident courses of the schools was an additional burden on the school facilities. Turkish authorities recognize the need for a complete revision and expansion of their military school system and have agreed to reorganize their schools in conformity with the system employed by the American military schools. Plans prepared by the American Mission to effect this change have been accepted by the Turks. This involves basic changes in curricula at all schools, reorganization and expansion of school staffs and faculty, and an extensive construction program at each school.

It was soon recognized that technical instruction alone would not meet the needs of the Turkish forces. During World War II, Turk officers had little opportunity to observe and keep abreast of tactical and combat developments. Consequently, if the Turks were to get maximum benefit from the modern equipment they received, it was obvious that American-supervised tactical instruction should be initiated in their army schools. Arrangements have been completed to integrate this type of instruction into the 1948-1949 school program. It is expected that the Turks will be able to assume the bulk of the instructional load for the 1949-1950 courses. Every effort is being made to establish a modern training and educational program which can be carried forward by the Turks when the American Mission is finally withdrawn.

Major General Horace L. McBride is a graduate of the U. S. Military Academy at West Point, Class of 1916. Appointed in Field Artillery, he served briefly in branch assignments prior to sailing overseas in late 1917, where in 1918 he took part in the Meuse-Argonne Offensive as Battalion Commander of the 347th Field Artillery of the 91st Division.

Following tours as Assistant Military Attache to Holland and Poland, General McBride returned to the States for duty which included the Advanced Course at the Field Artillery School at Fort Sill, PMS&T at Yale University, and back again as instructor at Sill. He attended the Army War College in 1935-36, and upon graduation became instructor at the Command and General Staff College.

General McBride took command of the 80th Infantry Division in its training period in the States, and led the division through the combat period across Europe. He moved on to command of XX Corps and the 9th Division in the occupation period, returning to the ZI in early 1947. With the implementation of the Truman Doctrine he terminated a brief tour as Commanding General of the First Service Command to become the Chief of the American Military Mission to Turkey.

Although there have been and still remain major problems to be solved before the objectives of the Military Mission can be accomplished, the results achieved to date have been extremely encouraging. The cooperation of the Turkish authorities is sincere and wholehearted. Their spirit, determination and interest leave little to be desired. Turkish public opinion continues to manifest interest in the American Aid program and increased confidence in the Turkish Armed Forces. The Prime Minister has publicly expressed appreciation for the help and facilities being extended by the United States. As evidence of the continuing interest of the American people in guaranteeing the national integrity of Turkey and improving the capabilities of the Turkish military establishment the American Congress in April 1948 authorized an additional appropriation to extend the aid program during the next fiscal year.

RUMANIA
BULGARIA
BLACK SEA
USSR
GREECE
ISTANBUL
ANKARA
TURKEY
IRAN
IRAQ
CRETE
CYPRUS
SYRIA

CARDED

Command and Communication

by Major Ralph E. Kuzell

The Staff of the *Journal* considers this one of the most important and notable contributions received in recent years. The author has given a logical presentation, carefully documented historically, of what is undoubtedly the most important subject confronting the leaders of Armored forces. Its importance will be further enhanced on the battlefields of tomorrow, where improved explosives force greater dispersion and where greater dispersion demands improved control.

IN a proper study of military history, it is not sufficient to memorize a number of dead facts. They may be interesting, but the advantage gained from such knowledge is solely cultural and not at all military. Nor is it sufficient to study only the strategy and the battlefield tactics. They are the most interesting subjects, and are the most often discussed in books, but they are by no means the only important ones. Students of military history should learn what brought about the results." In a study and determination of the decisive factors in many important battles it is strikingly significant that the means of communication available to the commanders, as well as their use of these communication facilities, often decided not only the outcome of the battle but established the strategy and tactics of the day.

A leader's capability as a commander is definitely limited by his skill in determining a basis for action and his ability to transmit to his subordinates his orders for implementing his plan. He must be able to decide what is best and he must be able to act. In deciding what is best, the commander must possess the maximum of information about the enemy and his own troops that science, discipline, and training will allow. Only when satisfied that he possesses all information available under the circumstances, will he be able to make a sound decision. In order to obtain this information, the commander must have a reliable system of communication, a system capable of operation under adverse conditions and capable of keeping abreast of the timing of his attack or of operating efficiently in spite of the disruption and chaos created by a rapid, powerful enemy attack. If the leader is to command his troops, if he is to transmit his decision, if he is to implement and supervise the execution of his plan, and if he is to handle his reserves in a manner that will be favorable to him; in short, if he is to control the battlefield, he must possess a system of communication that will transmit his orders in a timely and secure manner to his subordinates. He must control a system of communication that will provide instant warning of an enemy attack or counterattack, of an enemy withdrawal, or of a change in the enemy action which may affect his mission. He must be capable of instantaneous communication with his reserve so that he can commit it to take advantage of the situation as he knows it. A brief review of military history will serve to illustrate the influence of communication on strategy and tactics as well as its profound effect in determining the efficacy of command.

During the period from the beginning of authentic history to the wars between the Greeks and Persians and even for years thereafter, commanders did not hold out reserves to meet emergencies. Dispositions were determined and the outcome of most battles was decided before the troops were joined in combat. The successful commander placed his troops in formations designed to be most effective based on the intelligence he had developed concerning the enemy prior to the battle. Troops were instructed to operate in accordance with a preconceived plan and, once the actual battle had begun, the commander had practically no way of influencing the outcome if the enemy failed to develop according to expectations. To be sure, Alexander understood the value of reserves and frequently disposed his troops with provisions for reserves, but their use had always been predetermined by the dispositions of the enemy, and the reserves could not be controlled to meet an unforeseen emergency. Had ancient warriors understood the potentialities of communication in control, the value of training messengers and liaison officers, the use of visual and sound signals, they would have increased immeasurably the combat capabilities of their troops. It was not until much later, however, that the significance of these means of communication was understood.

Development of arms, machines of war, and the adaptation of transport to the soldier's needs have all had a marked effect on warfare. Warriors first fought in closely knit groups, and victory was determined primarily by physical strength and numerical superiority. It was found that certain formations were adapted to particular weapons, and as these weapons of war were perfected it was discovered that weapons of propulsion, such as bows and arrows and firearms, were most efficiently used in open formations. Variations in formations, however, demanded additional control measures, the first of which were rank and command. Along with the need for rank and command came the need for means of communication. As the slower more unwieldly formations succumbed to mobility and firepower, the need for improved methods of communication increased, and indeed determined, the ease with which the transformation to mobile warfare could be made. The transition from the use of crude methods of visual and audible signals to modern radio and telephone was long and difficult, and fraught with many hard-earned lessons for military commanders who failed to properly understand the value of good communication.

Hannibal, one of the greatest commanders of all time, won his famous victory at Cannae through superb handling of his troops. Yet Hannibal's control was based primarily on the dispositions of the enemy before the battle and the enemy's lack of mobility, not upon a superior system of communication in Hannibal's army. In fact, not long after Cannae, Hannibal suffered a crushing defeat that can be attributed primarily to poor communication.

> Hannibal was at Canusium, near Cannae, awaiting news from his brother (Hasdrubal), when a group of six messengers sent by Hasdrubal were captured by the Romans. They bore Hasdrubal's complete plan of operations, calling for a junction of the two Carthagenian forces near Narnia.
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> The consul, Caius Claudius Nero, one of the most alert Roman generals, was commanding the army facing Hannibal at Canusium. When he received Hasdrubal's message, he at once made plans to prevent the junction of the brothers. Leaving the bulk of his army in front of Hannibal, he marched with 6000 foot and 1000 horse to join Livius, the other consul, who was facing Hasdrubal south of the Metarus River. Hannibal was kept in complete ignorance, not only of his brother's movements, but of Nero's departure to intercept him. . . .
>
> Nero sent messages ahead to Livius, and was received so secretly in the camp of Livius that Hasdrubal knew as little of his arrival as Hannibal did of his departure, although the two armies were encamped only half a mile apart. . . .
>
> Practically the whole Carthagenian army was killed or captured. The Roman loss was about 8,000. Cannae was avenged, and Hannibal's last chance of conquering Italy was gone. . . .
>
> Creasy places the Metarus as one of fifteen decisive battles of the world. Had Hasdrubal won, it is possible that Hannibal would have conquered Rome, and destroyed it, as Rome later destroyed Carthage.[1]

The Romans with their well-trained, mobile legions dominated their enemies for centuries. With the advent of cavalry, however, mobility was an even more significant factor, which was not fully apparent until the eleventh century when the European world was startled by the Mongol invasion of Hungary, a striking example of open lightning-like warfare made possible by superior command control. Indeed, we may see in Mongol strategy the precursor of the armored blitzkrieg of World War II. European methods of combat did not apply to the rapidly moving, well-coordinated Mongol forces. The Mongols advanced against the European stronghold in three widely separated field armies, their right flank protected by a covering force which moved rapidly and with unbelievable success against numerically superior enemy formations. The Mongol armies were quickly concentrated on the Danube near Gran, and after a retrograde movement, conducted in a manner which has not since been duplicated from the standpoint of control, crossed the Sajo River in the face of the enemy, and enveloped the Hungarian army in a battle of annihilation, leaving 70,000 dead on the field.

Although we know little of the Mongol means of communication, the control and synchronization of the movements of their armies, which was evident in their campaigns, can be attributed to superior use of liaison officers and mounted couriers. Tactical control on the battlefield was obtained through the use of signal flags, which obviated delay necessitated in transmission of verbal or written messages and orders. Indeed, it is not likely that many of the Mongol officers could read or write.

With the development of printing in Europe, however, the general level of education was improved, and officers learned to read and write. Written orders were therefore more practical, and the military staff was no longer limited to liaison. During the Napoleonic Era, the semaphore was used in conjunction with mounted messengers and liaison officers. Napoleon himself, nevertheless, failed to perfect adequate control due to

ABOUT

THE

AUTHOR

Major Ralph E. Kuzell graduated from the U. S. Military Academy in 1941. He served with the 9th, 8th and 6th Cavalry Regiments and the 106th Infantry Division prior to attending the Command and General Staff College in 1944. Returning to the 106th he became Assistant G-2 overseas, moving into the OMGUS field after combat. He is now a member of the Command and Staff Department of The Armored School, where he is Instructor of Tactics.

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[1] William A. Mitchell, *Outlines of the World's Military History* p. 97.

lack of a good staff system with communications support. Faulty control and poor communication contributed to Napoleon's downfall at Waterloo even though he had personally made a sound estimate of the enemy situation and decided on a plan that would have defeated the enemy if properly executed.

On June 16, 1815, Napoleon launched an attack on Ligny against the forces of Blucher, who in attempting to envelop the French left had weakened the center of his line. Napoleon saw this mistake of his opponent and prepared an assault on the enemy center. Napoleon had detached D'Erlon's corps from Ney's force, which was advancing toward Brussels; and Napoleon waited for D'Erlon before launching the attack on Blucher's center. D'Erlon's corps did not arrive, however, so Napoleon attacked without it and drove Blucher from his positions, but was unable to press his advantage by following up Blucher's troops. As a result Blucher was able to retire and re-form his army. Analysis shows that Marshal Ney, who was making the secondary effort, had met increasing pressure and was about to reinforce with D'Erlon's corps when he discovered that a liaison officer from Napoleon had ordered D'Erlon to Ligny without informing Ney. Ney quickly ordered the return of the corps. The result was several miles of marching and countermarching for D'Erlon's corps which did not participate in the battle. The fact that the Prussians under Blucher were not routed by Napoleon made it possible for them to play a decisive part in his defeat at Waterloo on the 18th. Had Napoleon been able through an adequate system of communication to commit D'Erlon's corps at the critical time, he might have routed the Prussians and eliminated them permanently. Even though Napoleon through extreme personal exertion was able to observe the conduct of the battle and determine the point of decisive action, he was not able to carry his plans to a conclusion for he did not possess adequate control. A well organized staff supported by reliable communication might have saved him from defeat.

Lack of a satisfactory staff system was again evident in the plight of the Mexican Army, which during our campaign of 1847 had no organized staff or systematic means of intercommunication. Even though fighting on familiar soil, the Mexicans were unable to bring their superiority in manpower to bear at the critical time and place.

Prior to the American Civil War, the possibilities of military communication had been explored and developed by Lieutenant Meyer of the Army Medical Department, but little interest had been taken in his inventions. Moreover, the military implications of the development of the telegraph were not understood by military commanders generally. The changes in tactics during the American Civil War, however, were significant of the adaptation of these new means of control to military use as the war continued. By the end of the war the telegraph was used extensively, but required permanent type installations and presented problems in installation and extension which prohibited its use as a means of control with rapidly moving troops. The Meyer signal system, which involved transmission of code by flags and torches was used first by the Confederates and later by the Federal troops. By the end of the war, this method of visual signalling, as well as the telegraph, was in widespread use. However, since staff organization depended upon the whim of the commander, the most effective use was not made of these excellent means of communication for rapid transmission of information and orders. As a result commanders, with the exception of Grant and Jackson who were able to visualize enemy weakness and disregard their own, continued to be perplexed by their own disorganization while failing to discover the enemy's weakness. This is illustrated by Ewell's failure to take Cemetery Hill at Gettysburg because he waited for his rear division over which he had no firm control. Although his own forces were disorganized, the Union forces were far more disorganized, and he could have won the battle of Gettysburg had he been able to exercise better control over his divisions through proper use of the means of communication available.

During the Civil War, nevertheless, new methods of communication, while not developed to the maximum, did lend strength particularly to the defensive. Hasty field fortifications were used extensively by both the Northern and Southern forces. The forces under Lee at Richmond were particularly adept at the technique of throwing up hasty entrenchments and holding them lightly, warding off attempts at penetration and envelopment through the rapid movement of local and general reserves. Communication was adequate for the defender and enabled him to commit reserves as desired. The attacker possessed no means of disrupting communication within the battle position; the artillery used was relatively ineffective in this respect and quantities of ammunition consumed were small. The defender was able to maintain tactical unity within the battle position through verbal transmission of orders and instructions in the small units and the use of messengers, liaison, and visual signals within the battalion. The telegraph, visual signals, liaison, and messengers established control and coordination of battalions and larger units and permitted the employment of general reserves. The attacker, on the other hand, was plagued with the inability of communication to keep up with attacking troops in large formations. The trend toward stabilization of warfare was definitely established and foreshadowed the conditions which were to exist during World War I.

Although the telephone had been invented before our participation in the Spanish American War, we must look to the Russians for the military application of its use and the resultant additional strengthening of the defensive. During the Russo-Japanese War, the Russians adapted the telephone to use in front-line defensive units. Here again, as in the American Civil War, we see the communication lag on the offensive. The

Russians were unable to adapt the telephone to offensive usage, but employed instead a system of flags to point out positions of advancing troops, and in the lower echelons, markers were affixed to the backs of attacking men to indicate their positions.

During World War I, Russian developments in the use of the telephone were generally adopted. The general staff system which had been developed during the Franco-German War by Von Moltke, who incorporated the principles of Scharnhorst, provided a workable means for exercising command of large bodies of troops and was used in all large headquarters. Under staff control, telegraphic traffic was enormous, and radio made great strides, but was generally used only between large headquarters. Although the status of communication as a means of control had increased immensely, installations were still cumbersome and adapted to static or slowly moving situations. Only short advances could be supported, and rapid coordinated movements of large armies against enemy opposition were out of the question.

Open warfare in the west was effectively terminated in the Battle of the Marne. Moltke, in failing to follow the Schlieffen Plan, weakened his right flank and was, therefore, unable to envelop the Allied left as planned. Quite significant, as well, in his failure was the inability of the Germans to maintain liaison and contact between their armies as their weakened right met increasing enemy pressure. This was evidence of failure to adapt communications to mobile warfare; it was reminiscent of the age-old tendency to base control on planning designed to overcome initial enemy dispositions, but inflexible and unable to adjust to the unexpected. It foreshadowed the stalemate on the western front.

As World War II opened with the German war machine rolling through France and the Lowlands, the world was startled by the speed of the attack and the ease with which well-prepared defensive positions were overrun. This time, however, the German forces in the west were strong enough for their task; they had not been weakened as Von Moltke had weakened his right wing before his ill-fated advance to the Marne. The bold movements of the invading columns, their coordination, their timing and magnificent power at the critical points were reminiscent of the Mongol invasion of Hungary. The German success, upon analysis, was not all that it appeared to be. The German General Staff had perfected victory based on an undreamed of detail in planning, but therein lay their weakness. This weakness was not to become fatal until the battle of Stalingrad, nor was it to be really evident until we swept across France from the beaches of Normandy.

Although the Germans had made progress in the development of communication, control of their forces was due more to adherence to planned timetables, discipline, and the use of conventional means of communication than the adaptation of radio to synchronization of the air, tank, infantry, artillery team. As long as battles progressed as planned, the German commanders in the field were able to bring their strength to bear decisively. With the first strong blows of adversity, however, on the Eastern front where timetables had not been worked out so accurately, the dreaded German war machine lost the initiative for that short but fateful period which determined the difference between open warfare and siege warfare. At Stalingrad the Russians exhibited a tenacity that seems remarkable, but which upon analysis is really quite simple when we consider the weakness of communication within and between the German divisions and the fortuitous position of the Russians. With unexpected reversals, German field commanders were not able to regroup rapidly enough to prevent the Russians from stabilizing the front, while from the Russian standpoint, adversity had finally been blessed with makeshift communications which were able to withstand even the heavy shelling of modern warfare.

Urban wire installations adapted to military needs were generally proof against the German onslaught for two reasons:

1. German lines of communication were overextended, and with adverse weather conditions supply of artillery ammunition was at its best meager, while support by aerial bombardment had been crippled.
2. Whereas wire systems had heretofore been generally of the field type, installations at Stalingrad were protected and in many instances underground. Runners were shielded by buildings and rubble.

The Russians with their communication were able to mass effectively their heavy artillery, which devastated the attacking formations and provided the defensive with a truly irresistible strength.

Once the German fortress had been breached in Normandy, the German weakness in communication and control, evident at Stalingrad, was nakedly revealed, but unfortunately generally misunderstood. Herein lay the seed for the stunned plight of our own troops in December of 1944 when the Germans struck terror into the hearts of the Allies. After the breakout in Normandy, our troops, spearheaded by armor, moved violently to exploit enemy confusion and spread chaos across western Europe as they advanced with incredible speed.

Why was the proud German army which had itself swept over Europe in 1940 unable to stem this avalanche? Many people have attributed the inability of the Germans to counter our movements to the great Allied air superiority which enabled us to blast German rear areas and routes of communication, thereby prohibiting concentration of ground troops. It is utterly fantastic to believe that such is the case. To be sure, our air attacks were decisive, but in a different manner indeed. Air attacks, together with extremely heavy concentrations of field artillery initially reinforced by naval bombardment, so effectively cut the enemy wire communication systems in forward areas that he was stunned and unable to react. He failed initially to strike our beachhead in strength even though it is known that several divisions were available, and he was actually unable to intercept the movement of our armor across France until we halted for consolidation. It is sheer naivete to believe that air power virtually alone and by its interdiction of roads and canals and the destruction of bridges and railroads prevented the Germans from resisting our advance or properly withdrawing their forces. A modern army is not limited to roads nor is it impeded by blown bridges, and it certainly is not dependent on railroads and canals for effective withdrawal. The loss of all these facilities affected the enemy seriously, but the difficulties presented were not insurmountable. The German was confused. His units in contact failed to provide the necessary combat intelligence, and he did not know the locations of his own divisional troops—his communications were inadequate.

On the other hand, our own advance would never have been possible without direction and coordination. Our methods differed somewhat from those used by the Germans in the invasion of France in 1940. Although our plans for the initial amphibious assault were extremely detailed, their execution involved intricate systems of communication. Our later plans were based on battlefield developments, and the resulting combat intelligence. After the breakout planning was necessarily abbreviated and dissemination of orders rapid. The development of intelligence and the direction of troops is not possible in a rapidly moving situation without effective communication. Communication was the key to the success of our advance. Radio and radio relay provided the flexible system of information and control so necessary to the commanders in the field. Radio relay carried great volumes of traffic with an astonishingly low demand on personnel and with a minimum of logistical support.

> The great advantage of radio relay over wire circuits which could carry equivalent traffic is shown best by figures. Material for a 100-mile wire line with four wires weighs ninety-four ship tons, whereas radio relay for that distance weighs only twenty-five ship tons. The construction of such a wire line would take four battalions, or 1,820 men ten days, while forty-four men can install the equivalent radio relay and put it into operation in two days or less. Moreover, after the wire line has been constructed every foot of it is vulnerable to bombing, sabotage, demolition, accidents from vehicles; even buried cables were cut by bulldozers, graders, etc., whereas a radio relay system is subject to trouble at only the two terminal stations and the two or three relay stations and there are always alert men at each of these points to prevent or to correct immediately any interruption.[2]

As our troops moved with increasing speed across France from the Normandy beaches, long circuits were required "faster than any type of wire circuits could possibly be installed." Radio relay, although widely used forward of army group headquarters, even with its great advantages was unable to satisfy the initial demand. Radio relay equipment could not be provided in the necessary quantity. Sufficient long-range radios were not readily available, and improvisations, such as General Patton's use of the Sixth Cavalry Group as a Third Army communication agency, were unable to fill the gap completely. Field wire was used in enormous quantities; over 900,000 miles were consumed in the European Theater during eleven months of operations. Logistical support was not sufficient to provide such quantities initially to our rapidly moving armies. Communication suffered; as our formations were extended, control was weakened. Regrouping was necessary and our troops were halted in the shadow of the German homeland, while the Germans were able to gather their scattered elements into a semblance of organization. Although they had left behind in their confusion many service and supporting troops which had been out of contact with headquarters, they were able to maintain their major combat grouping for a later defensive thanks to the time offered by the halted Allied advance.

Even though American troops had successfully used radio in offensive operations throughout the war, and even though it had been adapted to joint operations and integrated through radio relay into multi-channel speech and teletype circuits capable of being connected directly into telephone and teletype switchboards to handle voluminous traffic, it did not meet completely the needs of open warfare in Europe. Radio relay had been used in Africa, Sicily, and Italy, but was not provided in sufficient quantity to meet the demands of our rapid offensive. Our operations, of course, could never have proceeded successfully if it had not been for the communication provided, and in the face of our successful offensive, it is difficult to criticize our communication. In the shadow of our success, nevertheless, lay a basic weakness in communication and control, which although it had helped to set the stage for our most serious reversal of the war, the German winter offensive in the Ardennes, was not evident until that surprise attack had effectively split our forces and caused serious losses. The Germans, with the time which we had allowed them when our forces ground to a halt after the dash across France, not only re-formed but actually launched a major counteroffensive.

Out of the early morning haze on December 16, 1944, this German thunderbolt, which had been forged from adversity, struck the U. S. First Army with the terrible force of surprise and violence which staggered the V Corps and sent the VIII Corps reeling in confusion. V Corps in the Monschau area was able to hold after its southern flank had been refused. VIII Corps, which bore the brunt of the attack, was so thoroughly shaken that chaos reigned throughout the vast undermanned Corps sector. The 14th Cavalry Group on the Corps' north flank was brushed aside by "Kampfgruppe Peiper," the lead tank infantry team of the 1st SS Panzer Division, the elite *Liebstandarte Adolf Hitler,* and then ground between that division and the German 18th Infantry Division as it skirted the northern shoulder of the Schnee Eifel, successfully cutting it off in conjunction with its sister division of LXVI Corps, the 62nd Infantry Division, and isolating two American Infantry regiments. Farther to the south, the German LVIII Panzer Corps smashed against the southern 424th Infantry Regiment of the 106th U. S. Infantry Division, and after battering itself against unexpectedly strong resistance, as the 424th Infantry was bolstered with a strong counterattack by CCB of the 9th Armored Division, the LVIII Panzer Corps veered to the south in its efforts to reach Houffalize and by 18 December, in conjunction with the XLVII Panzer Corps, had effectively disrupted communications within the 28th Infantry Division, opening a route to Bastogne and the west. The German attack had effectively broken through VIII Corps north of the Schnee Eifel in the sector of the 14th Cavalry Group and to the south in the sector of the 28th Infantry Division.

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[2] Major General W. S. Rumbough, "Radio Relay, the War's Great Development in Signal Communications," *Military Review* (May 1946), p. 7.

VIII Corps had lost control of the situation. Forward battalions and even regiments were out of contact with their division headquarters, available reserves had been committed and piecemeal reinforcement was made without proper orientation and without information of the enemy so necessary to their sound employment. Communication had been destroyed within the two key defensive divisions of VIII Corps, and this corps, which had operated effectively during the invasion while on the offensive, was now suddenly ineffective as a command agency. The basic cause of this reversal is obscured by the overwhelming enemy force which was brought to bear all along the corps front, but cannot be discounted in spite of the odds; this cause was inadequate communication. This is significant because it points to a general and critical weakness of our American Army. If we are to avoid such situations in the future, we must study the communications employed in the Ardennes Campaign, which is one of the few instances in which our late army fought defensively against initially superior forces on a large scale, and it must necessarily, therefore, set the pattern for the future.

It has been said that the student of the art of war should not criticize the decisions of officers in the field upon the basis of knowledge that was not available to these officers. This dissertation is in no way an attempt at criticism, but an effort to show the importance of communication and its effect on decisions and actions. Commanders must have timely information in order to make sound decisions. In the future information will not be available and decisions will not be properly conceived or executed unless we heed the warnings of military history and their climax in the Ardennes. Communication is the key to command. I have gone to considerable length in outlining the history of military communication in its effect on commanders, their strategy, tactics, and upon the technique of warfare. The full import of this study, unfortunately, is felt only by the man who has found himself in a position of command and great responsibility without the means of either contacting his own troops or locating the enemy. I will now turn to a more detailed study of command and communication in the Ardennes to show our shortcomings to those who aspire to lead American troops in combat with the hope that they will realize the importance of communication.

Let us begin our study with the individual soldier in a front-line unit. The unit I have chosen for purposes of illustration is the 106th Reconnaissance Troop of the 106th U. S. Infantry Division. On December 16, 1944, the 106th Reconnaissance Troop was attached to the 424th Infantry and occupied the village of Grosslangenfeld, Germany, between the 424th Infantry and the 423rd Infantry to the north. I have purposely selected the 106th Reconnaissance Troop as the small unit for discussion because it possessed excellent means of communication and lay in a position between two regiments where contact was critical. The infantry rifle companies along the line had no better means of communication than the troop in question. In fact, infantry units of company size were generally limited to wire and a few very poor short-range radios. The 106th Reconnaissance Troop was tied in by wire communication with the unit on its right, the Cannon Company of the 424th Infantry, and by patrols it contacted Troop B of the 18th Cavalry Squadron on its left next to the 423rd Infantry in the Schnee Eifel. In the 106th Reconnaissance Troop were 13 radios, SCR 506, which were capable of providing reliable communication for a distance of at least 25 miles in the rugged terrain of the Eifel. Not one of these radios was effectively operated on or after December 16, 1944. The 106th Infantry Division was on radio silence prior to December 16, and the reconnaissance troop had failed to provide a listening watch for even one of its radios. After other means of communication had been destroyed and contact with adjacent units and higher headquarters by patrols or messengers was virtually impossible due to enemy activity, it was apparent that radio was the only means of communication available for calling for artillery support, supplies or instructions. The pertinent extracts of the SOI, however, were not available, and the radios could not be netted in the regimental or division nets.

The individual soldier in the 106th Reconnaissance Troop found himself, therefore, shortly after the start of the battle in a small unit which was completely isolated from all other American troops. Wire communication had been destroyed by heavy enemy shelling and messenger communication was prevented by the physical presence of enemy troops who had by-passed the position and cut the wire remaining untouched by artillery fire. Even though individuals in the 106th

Reconnaissance Troop obtained significant information of the enemy and made observations of the movements of large bodies of enemy troops, they were unable to report to higher headquarters and, unfortunately for them, they were unable to call for artillery fire on the enemy troops which were attacking and by-passing their strongpoint. The individual in the troop had one comforting advantage; he was able to talk to his companions, to communicate by voice, and to maintain visual and physical contact with the members of his unit, for the troop was concentrated in the small village of Grosslangenfeld. As he saw the adjacent position of the Cannon Company of the 424th overrun in the dim distance and as he heard from fellow troopers that Troop B of the 18th Cavalry Squadron was withdrawing on the other side of Grosslangenfeld, he was scared, utterly and completely scared. Soon his mind was intent on only one thing, self-preservation. All thought of previous training had been abandoned. Fear had driven from the soldier's mind his will to fight, and this fear was based on tactical ignorance—loss of communication, the foster parent of rumor, despair, and chaos. The troop commander in this case was no more effective than chaff before the wind. As the fog of war swirled and eddied about him, he surrendered, formally relinquishing the command which he had effectively terminated when he had failed to provide adequate communication.

The 106th Reconnaissance Troop had been eliminated, yet it had provided the next higher commander with not one bit of information upon which he could act. Units all along the line were in the same predicament; with wire communication cut off they were unwilling to expend men on missions of liaison and contact, and in many cases such a course was virtually impossible. As communication was destroyed, the situation became increasingly obscure. For every report received, at least ten were not. Communication in forward areas had been quickly and easily destroyed. In this confused situation, higher commanders found themselves frantically grasping at bits of information, forcing themselves to make decisions based on assumption. Battalions in many cases quickly lost control of companies when open wire circuits were cut by the initial artillery preparation. Regiments were in intermittent contact with battalions and the longer lines to division were effectively destroyed by sabotage, artillery bombardment and the movement of vehicles in the heat of battle.

The 106th U. S. Infantry Division had inherited from the 2nd Infantry Division, which it had relieved before the battle, a wire system of long standing which had been developed over a period of weeks into a complicated maze of wires. After the enemy attack had begun to affect the wire system, wire teams were unable to decipher the maze and were slaughtered by the enemy as they valiantly laid wire into the very face of advancing enemy tanks. The 422nd and 423rd Infantry Regiments of the 106th U. S. Infantry Division were cut off in the Schnee Eifel and two of the infantry regiments of the 28th Infantry Division were cut off from communication with their division headquarters. Much has been said about the plight of the 422nd and 423rd Infantry Regiments which succumbed quickly to the enemy after they had been cut off in the Schnee Eifel. It is not commonly understood that these regiments were unable to call for artillery support. They could not do so because communication had been severed. The regiments had been thinly spread, for the 106th Division had occupied a front of approximately 28 miles. In such a situation, the most effective initial resistance that can be offered is through the employment of artillery fire directed by observers in front-line strongpoints, and the next course of action is the transmission to the rear of information that will enable the commander to gauge the enemy attack so that he can dispose his forces to meet it. Neither of these courses was open to the two infantry regiments in the Eifel.

It is interesting to compare the situation of these regiments of the 106th Infantry Division with that of the 101st Airborne Division at Bastogne. When it looked as if the 101st Division was going to be surrounded at Bastogne, a complete radio relay terminal set was mounted on a truck and sent into Bastogne as the last vehicle to enter the town before the Germans completed its encirclement. Through this set Corps had telephone and teletype communication with the division, whereas wire communication would have been impossible.

Although the commander of the 106th Infantry Division promptly committed his meager reserves on 16 December, reserves under Corps control did not arrive in time to save the thinly spread troops of the 106th before the Schnee Eifel had been cut off by the German LXVI Corps. Time was of the essence and communication was necessary to make the most of the time available. Delays in the commitment of reserves were due not to poor intelligence but to poor communication which failed to transmit timely information, and apparent reluctance on the part of the Division Commander to present to Corps a dark picture of the situation until it had been established by reports. The 106th Infantry Division, although new to combat, was well trained from the standpoint of intelligence, but friendly as well as enemy dispositions and movements were obscure due to unforeseen communication difficulties. *No infantry division in the U. S. Army possessed a radio communication system adequate for control in the mobile defense of large areas.*

The advantage of a strong radio system is evident when we consider the excellent intelligence initially furnished by the 14th Cavalry Group, a unit organically dependent on radio communication, as opposed to the infantry regiment whose tactical doctrine relied on wire as the principal means of defensive communication. The 14th Cavalry Group, attached to the 106th Infantry Division, was able to produce timely intelligence early in the attack due to its organic communications advantage. Radio functioned under the battering of artillery bombardment and withstood the forays of enemy troops and tanks; wire did not. The S-2 of the 14th Cavalry Group, basing his estimate on reports received from front-line cavalry units, correctly evaluated enemy strength and accurately located the 1st SS Panzer Division during the morning of 16 December. Later developments were to show, however, that the organically sound communication system of the cavalry group failed to function properly under stress, primarily because of personnel failures, failures which produced significant time lag in the transmission of messages. In one instance the group liaison officer at division reported the group locations approximately nine miles forward of actual positions. The discrepancy in this case was due to bungling and delay in deciphering slidex code by the liaison officer.

Since reserves could not be committed in time to halt the German attacks in the forward areas, the enemy was able to provide the necessary momentum to his two initial penetrations in the VIII Corps sector to drive deep into our rear areas cutting communications as he went. Wire communication was destroyed and service units were thrown into confusion, with the exception of those organizations which were able to rely on radio for control.

> During the critical days of the "Battle of the Bulge," radio played what was probably its most important role in First Army Ordnance Service. . . . Two battalion headquarters and approximately twelve ordnance companies (52d Ordnance Group) were located in the path of the advancing German forces. All these units, with the exception of one ordnance medium maintenance company were withdrawn without loss of personnel or matériel. One battalion headquarters, the 86th, and several of its companies, located in Malmédy, were ordered by telephone to withdraw on the afternoon of 17 December. This was the last wire communication that the 52d Ordnance Group had with any of its units located in the sector of the German attack. All other units of the 86th Ordnance Battalion and the entire 83d Ordnance Battalion were alerted by radio and, as the necessity arose, were ordered to withdraw along specified routes.
>
> During the next two or three days, Army Headquarters moved twice and 42d Ordnance Group Headquarters moved twice. During this time Group Headquarters was in continuous radio communication with Army Ordnance and with all its battalions. . . .
>
> The attention of the reader is invited to the fact that with the exception of a few telephones, a small amount of wire, and a few switchboard operators, all the personnel and equipment of the First Army Ordnance Communications System was in excess of appropriate T/O&E, and was obtained by special authorization. It is earnestly hoped that, in the adoption of future tables of organization and equipment for ordnance units, serious consideration will be given to this vital accessory to ordnance service—communications—and that adequate personnel and equipment be provided therefor.[3]

As the German spearheads were driven through the army maintenance area, the command channels of our major headquarters were destroyed. Open wire circuits and buried cable were effectively cut and finally the radio link system between Army Group and Army was overextended. Although personal liaison could still be maintained and roundabout communication was improvised through commercial lines, communication was one of the considerations in the shifting of command of First Army to 21st Army Group control. We see, therefore, that communications had a major influence on the tactics and command employed in this great battle.

Now what lessons are to be derived from the Ardennes campaign? It seems to me there are at least the following:

1. Radio is fundamentally the principal means of communication on the mobile defense. Wire, although more secure from the standpoint of counterintelligence, is not dependable when subjected to bombing and heavy artillery concentrations.

2. Radio link is definitely advantageous for handling large volumes of traffic but alternate or mobile relay stations must be provided in quantity sufficient to allow regrouping, shifting of troops, and large-scale retrograde movements.

3. When defending wide areas, we must of necessity hold lightly and rely on air and artillery support and counterattack as our principal defensive means, and these means can be employed only through a flexible dependable communication system.

4. During World War II, radios of adequate range were not available in sufficient quantity in infantry divisions to allow employment of the divisions defensively on wide fronts. Adequate radio systems were not provided for supporting service units.

5. Even though sufficient radios of proper range be provided, they will not provide command control unless operating personnel is trained to use them efficiently.

6. Although radio communication is possible when equipment and trained personnel are provided, commanders of all echelons must make communications systems workable through personal support and supervision.

In general terms then, we can say that during World War II communication, principally radio and radio link, made possible the command and coordination of our field armies, and that while these means of communication were capable of supporting a successful and rapid offensive of combined arms, they must be provided in greater quantity before we can obtain maximum speed and momentum in our attack. Moreover, the allocation of equipment should include that designed to meet the needs of the defense as well as the offense. Less reliance should be placed on defensive wire communication. We should devote more time to the training of personnel in the use of communications, and we should spare no effort in developing an awareness of the significance of communications in officers of all ranks.

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[3] Colonel J. D. Sams, "Communications In Army Ordnance Service," *Military Review* (May 1947), p. 53.

We have traced the development of communication and its effect on command from the beginning of history until the end of the recent war. Combat has been marked throughout the ages by a constant struggle for dominance by increasing offensive power which, although it has usually been met by an increase in defensive strength, represents a definite trend toward open warfare. This trend has been dependent upon development of means of communication and control. Early commanders were restricted to struggles based primarily on physical and numerical superiority on the immediate battlefield. Once battle had been joined, troops could not be manipulated and reserves could not be controlled. After the commander had made his plan and committed his troops, he had little influence on the outcome of the battle. Later developments in control permitted flexibility, and the Romans were able to employ mobility to defeat the Carthagenians who had failed to perfect the technique of coordinating the movements of large forces. Europe was unable to produce a system of control whereby her larger armies were able to meet the rapidly moving Mongol columns to destroy them in detail before their juncture at the Danube. Even Napoleon was not able to handle his reserves as he desired for his means of communicating orders were faulty. During the later stages of the Civil War and during World War I, the trend toward open warfare was blocked because communications had been adapted to the defensive in such a way that the slower offensive could be countered with reserves and artillery. Wire communication had provided the defensive with great strength by the end of World War I, and the balance did not swing in favor of the offensive until the widespread use of radio made possible adequate control on the offensive in World War II. Just as radio has strengthened the offensive, however, it promises great strength to the defensive if employed along the lines indicated by our lesson in the Ardennes. The future of the defense is even stronger when we consider the possibilities of employment of long-range guided missiles directed by observers from lightly held forward areas.

The capabilities of an organization to conduct a mobile defense against tanks and infantry, with air and artillery support, depend on the following factors, as well as the mobility and strength of the enemy force:

1. Width of sector to be defended
2. Artillery, guided missile, and aerial support
3. Available reserves and their mobility

These three factors are all dependent upon the control which the commander is capable of exercising.

In the first instance, the width of the sector determines the nature of the composition of garrisons in forward positions. If the sector is wide, garrisons must of necessity be small and widely separated, and their mission must be that of reporting enemy dispositions and directing artillery and long-range guided missile and aerial attack upon the enemy formations. It can be assumed that in the future the manpower differential between our country and our probable opponent will dictate such a defense, based on holding wide sectors lightly, with forward elements located along important terrain features and avenues of approach. The tying-in of this forward line will be, in most cases, dependent upon radio communication which is the only means upon which the commander can depend for control.

In the second instance, the commander can support the holding garrisons only in proportion to his ability to control communication with these elements in order to direct fire and bombardment upon the enemy.

Considering the employment of reserves in the third case, it is obvious that the commander can obtain accurate and timely enemy information, upon which to base his decisions for employment of reserves, from his forward elements and supporting aircraft, primarily through radio communication. Moreover, as has already been indicated, manpower considerations can be assumed to be such that the commander cannot afford to make any error in judgment in committing a reserve that will be extremely difficult to replace. Since his communication must be positive, rapid, secure, and flexible enough to stand up under the pounding of enemy attack, it must of necessity be built around radio.

In the final analysis, therefore, command in the conduct of the mobile defensive type of warfare which may be expected in the future, will be dependent upon communication based on the intelligent use of radio in all echelons.

Any offensive action that we may adopt in the next war must inevitably consider the manpower differential also. Intelligence will be vital to the commander, who cannot embark upon an operation without assurance of success with minimum losses. Control must extend from airborne troops to guided missile and rocket support operated from rear bases. Communications must provide this flexible control, as well as the means for transmitting intelligence. As in the mobile defense, the system must depend on radio.

In order to insure successful command of our troops in the future, we must provide radios of appropriate ranges in all echelons. We must make all personnel communications conscious. Each commander must consider communications as a potent weapon, which requires his personal attention and supervision.

RECONNOITERING

In a recent swing down the Pacific Coast and through the Southwest the Editor's seat became pretty well worn down not only figuratively but literally. There is, however, a great deal going on that is of interest to Armored Cavalrymen. For instance, at one time or another many of our readers visit Los Angeles. Probably few of them know that they have available for use one of the finest Officers' Clubs in the United States.

Known simply as the "Officers' Club," the installation is located at 2626 Wilshire Boulevard close to downtown Los Angeles. It was formerly the site of a very comfortable apartment hotel and by tearing out this and that and replacing with a modernistic bar, lounge and dining room, the Directors have emerged with a really smart rendezvous for officers and their families and friends of all branches, services and Allied Armies.

Maj. Gen. D. H. Hudleson is Chairman of the Board of Directors, with Col. J. T. Roberts as Executive Director and Lt. Lawrence Guterson as Club Officer.

Col. Roberts will be remembered as the Trains Commander of the 9th Armored Division during the war, and is now assigned as commander of the 13th Armored Division (Res). The Division is very active in the Los Angeles area and promises to become one of the strongest supporters of the JOURNAL.

Besides the high-class lounge, dining and bar facilities, there will soon be a sales store opened for Class Six supplies. Due to some cagey buying by the Directors a very unusual stock will be available.

All visiting officers are urged to take advantage of the Club facilities during trips to the West Coast.

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For the Cavalryman, there can be no better evidence of Branch unification than that turned up by a visit to Fort Bliss. To see what the Coast Artill... (pardon, the Antiaircraft Artillery) has done to preserve the atmosphere of the horse days warms the cockles of an ex-hussar's heart.

The horse show ring looks better than in the days when Walter Witaski rode for the Garry Owens, or when Harry Chamberlin changed leads on *High Hat*. The polo fields are as green as a bit of the Ould Sod, under the watchful eye of Col. Ray Lewis, Deputy Post Commander, and are awaiting the umpire's throw to Cecil Smith and a host of the hottest malleteers ever to grace the turf below the swimming pool.

Of course, this is all in preparation for the Fort Bliss Centennial celebration in November. The horse show ring (Howze Stadium) will be the scene of an exhibition by the Mexican Olympic Team which triumphed recently in the games in England. The polo tournament will involve a dozen or more teams, including stars such as Cecil Smith, already mentioned, and many others from El Ranchito and the other top southwestern Clubs. All in all, it promises to be the best meet ever held at any time between Long Island and Los Angeles.

Incurable Garry Owens will take satisfaction in knowing that Pop Graham still flaunts a sign "7th Cavalry Tailor" right in the midst of Guided Missile batteries and other such doodads of push-button warfare. Pop says to hell with it. If they don't like it they can . . . well, you know Pop.

It does seem a bit ironic to have all this done by the Antiaircraft Artillery and the Guided Missile boys. And not a single apology of any kind is offered. Apparently they just like it.

✣ ✣ ✣ ✣

The Editor made a flying trip to the Armored School in mid-September for the purpose of swelling the subscription list and at the same time to assure the supporters of the Journal as to the strict editorial policy of publishing the magazine by and for Armored men.

A tour of the School these days is quite an eye-opener to anyone whose military education, in the formal sense at least, has been standing at ease since, say, even as late as 1943. The graduate of the Branch schools or of Leavenworth in those times was quite convinced in his own mind that he had been exposed to some pretty high-powered pedagogy. But it can be safely said that the schools of yesterday compare to the Armored School as the little red schoolhouse of a hundred years ago compares to a modern streamlined college.

Brig. Gen. Bruce C. Clarke, Assistant Commandant, has energetically pushed drastic improvements in classrooms and in training aids. Aided by a very able staff and corps of instructors he has renovated buildings so that the present classrooms are a distinct pleasure to work in, both from the student's standpoint and the instructor's. Walls and lighting make a comfortable color combination; chairs have soft cushions which effectively ward off the occupational diseases of the military student; microphones are scattered at handy intervals to assist the student who is called on to speak; blackboards are metal, and the little gimmicks which are used as markers for tactical problems are magnetized so that they can be stuck anywhere, at will, on the board and as easily removed.

We were guided through the various buildings which house the Automotive instruction by Lt. Col. Reynolds who heads this important activity. It was a painless trip, since it was only necessary to climb into a peep and ride through. However, any guest is frequently forced to dismount through sheer interest in the various training aids which are plentifully strewn about and which are the product of the inventiveness of the instructors. These consist principally of cut-down working motors and chassis, plastic mock-ups and the like which give the student an immediate picture of what goes on inside a vehicle or any of its parts.

On the whole the tour forms a most effective backing for the article in our last issue by Mr. Henry C. Porter, Civilian Educational Adviser at the School on "Instructional Methods in the Army." Mr. Porter's theme was that the Army today (and *we* mean the Armored School) leads the world in the quality of its instruction. Since it takes but a glance to prove him right it is no wonder that more and more educators are being attracted to the Armored School.

WHAT DO YOU WANT?

by Lieutenant Colonel Paul M. Morrill

NOW is the time for all good officers to come to the aid of themselves. This is the season when the thoughts of all officers should be directed toward the annual "Statement of Preference." Section IX of War Department Circular 130 of the 1947 series provides for the submission by all officers of a Preference Card to be sent annually to The Adjutant General between the 15th of November and the 15th of December. This is doubly important this year because the old "Statement of Preference" has been replaced with the new DA AGO Form 483 (Officer's Preference Card) of 1 April 1948.

Although dated on All-Fools' Day this new card is no joke. A little study and contemplation before filling it out will pay you big dividends in consideration for assignments that you believe desirable. Experience with preference cards in the past has been such that some words of explanation and advice are indicated.

Your preference card is filed in the Career Management Branch of your duty arm or service. In the Cavalry Branch (and I'm sure the same is true in all other arms and services) your preference card is consulted every time you are considered for reassignment. It is the only standard form in this office that reflects your personal desires. It is *YOU!* With that in mind consider the following simple list of DO's and DON'T's:

DO SUBMIT A PREFERENCE CARD. Submit it now and keep a copy for your own files. Examine this copy periodically to make sure that it continues to reflect your personal desires. Whenever circumstances arise which cause the card to be out of date from your point of view—submit a revised card.

DO PREPARE IT NEATLY. Use a typewriter if at all possible, or at least print it neatly in ink. An illegible card cannot advance your interests in any appreciable way and might be considered indicative of a slothful and careless attitude.

DO FILL IT OUT PROPERLY. Because this is a new form consult the check list below.

DON'T ASK THE IMPOSSIBLE. By so doing you waste your opportunity to be considered for the possible and desirable.

DON'T FOLD OR MUTILATE. The card must be filed and it must stand up under months of clerical handling.

DON'T BE VERBOSE. A brief statement of exactly what you want is the most easily noted when hundreds of cards have to be screened.

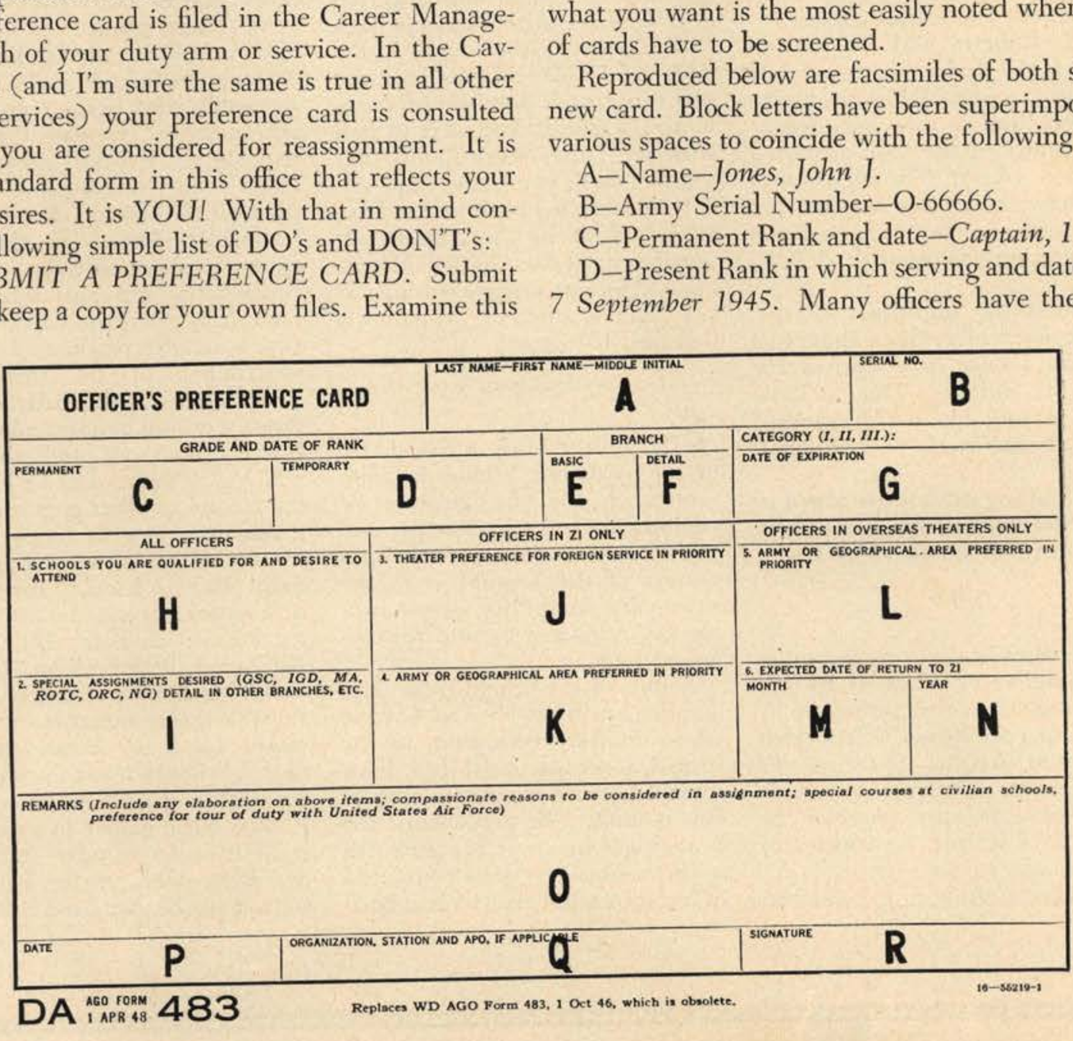
Reproduced below are facsimiles of both sides of the new card. Block letters have been superimposed on the various spaces to coincide with the following check list:

A—Name—*Jones, John J.*

B—Army Serial Number—O-66666.

C—Permanent Rank and date—*Captain, 1 July 1948.*

D—Present Rank in which serving and date—*Lt. Col., 7 September 1945.* Many officers have the same per-



OFFICER'S PREFERENCE CARD

LAST NAME—FIRST NAME—MIDDLE INITIAL A

SERIAL NO. B

GRADE AND DATE OF RANK

PERMANENT C

TEMPORARY D

BRANCH

BASIC E

DETAIL F

CATEGORY (*I, II, III.*):

DATE OF EXPIRATION G

ALL OFFICERS

1. SCHOOLS YOU ARE QUALIFIED FOR AND DESIRE TO ATTEND H

2. SPECIAL ASSIGNMENTS DESIRED (*GSC, IGD, MA, ROTC, ORC, NG*) DETAIL IN OTHER BRANCHES, ETC. I

OFFICERS IN ZI ONLY

3. THEATER PREFERENCE FOR FOREIGN SERVICE IN PRIORITY J

4. ARMY OR GEOGRAPHICAL AREA PREFERRED IN PRIORITY K

OFFICERS IN OVERSEAS THEATERS ONLY

5. ARMY OR GEOGRAPHICAL AREA PREFERRED IN PRIORITY L

6. EXPECTED DATE OF RETURN TO ZI

MONTH M

YEAR N

REMARKS (*Include any elaboration on above items; compassionate reasons to be considered in assignment; special courses at civilian schools, preference for tour of duty with United States Air Force*) O

DATE P

ORGANIZATION, STATION AND APO, IF APPLICABLE Q

SIGNATURE R

DA AGO FORM 1 APR 48 483

Replaces WD AGO Form 483, 1 Oct 46, which is obsolete.

16—55219-1

At an appropriate moment, some hints from the Executive Officer of the Cavalry Branch on a subject close to us all.

manent and temporary ranks but with different dates.

E—Basic Arm or Service—*Cavalry or appropriate arm or service.*

F—Duty Arm or Service to which detailed (by Department of the Army orders only)—*Cavalry,* or appropriate arm or service.

G—For non-regular officers, category and date of expiration; for regular officers—*RA.*

H—Schools desired. Do not list schools which you are not eligible to attend. Special courses and foreign or schools of other services may be entered either here or in space "O"—*Armed Forces Staff College.*

I—Special assignments as desired—*ROTC, Mississippi State.*

J—ZI officers only list overseas theaters in order of priority desired. If "None" is entered you will be assigned to whatever theater has a vacancy when you are next due for foreign service. 1. EUCOM, 2. FECOM.

K—ZI officers only list geographical areas in US that you desire, in order of priority—*1. Hattiesburg, Miss.; 2. Denver, Colo.; 3. West Coast, etc.*

L—Overseas officers only list geographical areas in the US that you prefer, in order of priority—*1. Northeast States; 2. Cleveland, Ohio; 3. Fort Benning, Georgia, etc.*

M & N—Expected date of return to US (overseas officers only)—*May 1951.*

O—Any remarks you wish to make including expansion of remarks under any other space. If you need additional space use a blank 5″ x 8″ card stapled to the back. Place staples through left margin only. Do not use paper clips.

O—(Continued)—*Would like Naval School of the Line, Air Command and Staff College. Request dry climate due to wife's asthma, etc.*

P—Date of submission of this card—*21 Nov. 1948.*

Q—Complete Military Address—*6th Constabulary Sqdn, APO 139, New York.*

R—Your signature certifying that the information on the card is representative of your personal wishes.

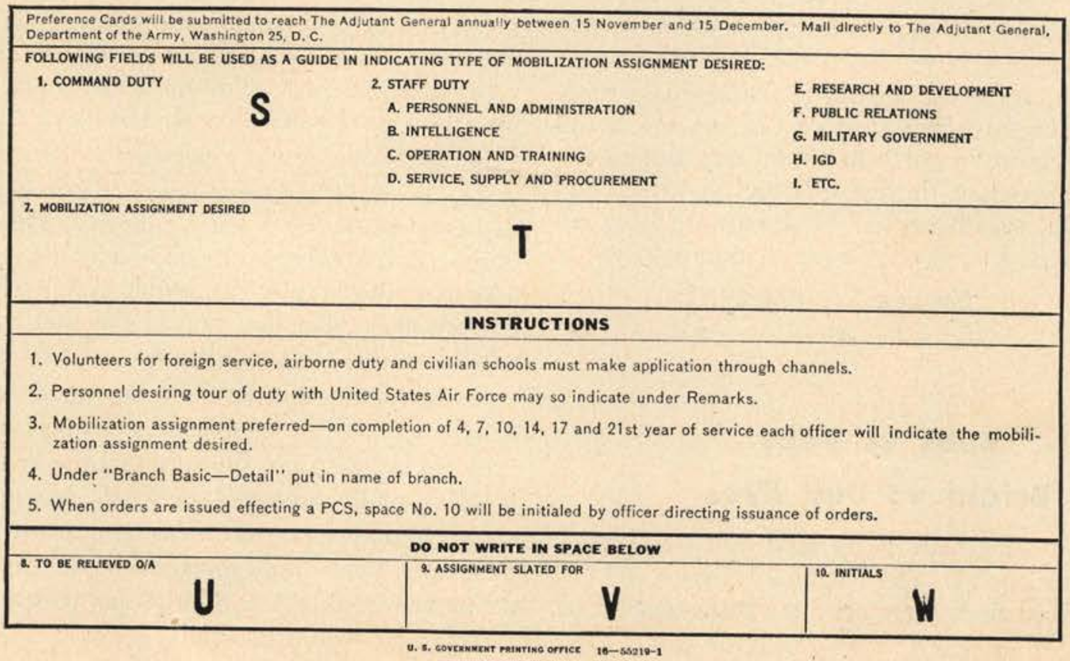
S—Do *NOT* put anything in this space. It is designed to assist you in filling out the next space.

T—Note Instruction 3 on the card. All officers who have completed 4 or more years' service should indicate a desired mobilization assignment this year, and be guided in the future by the periods indicated. Do not request an assignment for which you are not now qualified. You may list several in order of priority—*1. Command, Tank Bn; 2. G-3, Armd Div; 3. Military Govt, any level.*

U, V & W—Do not fill these out. They are intended for the use of the Career Management Branch.

By following these simple instructions, the result should be a completed accurate, neat and usable card, one which will insure your consideration for the assignments you think desirable . . . represent you in your Career Management Branch . . . help us to help you . . . and contribute toward the goal of mutual understanding and confidence.

If this is true you may rest assured that your desires will be considered, and wherever possible, your assignments will be those you want.



Preference Cards will be submitted to reach The Adjutant General annually between 15 November and 15 December. Mail directly to The Adjutant General, Department of the Army, Washington 25, D. C.

FOLLOWING FIELDS WILL BE USED AS A GUIDE IN INDICATING TYPE OF MOBILIZATION ASSIGNMENT DESIRED:

1. COMMAND DUTY
S
2. STAFF DUTY
   A. PERSONNEL AND ADMINISTRATION
   B. INTELLIGENCE
   C. OPERATION AND TRAINING
   D. SERVICE, SUPPLY AND PROCUREMENT
   E. RESEARCH AND DEVELOPMENT
   F. PUBLIC RELATIONS
   G. MILITARY GOVERNMENT
   H. IGD
   I. ETC.

7. MOBILIZATION ASSIGNMENT DESIRED
T

INSTRUCTIONS

1. Volunteers for foreign service, airborne duty and civilian schools must make application through channels.
2. Personnel desiring tour of duty with United States Air Force may so indicate under Remarks.
3. Mobilization assignment preferred—on completion of 4, 7, 10, 14, 17 and 21st year of service each officer will indicate the mobilization assignment desired.
4. Under "Branch Basic—Detail" put in name of branch.
5. When orders are issued effecting a PCS, space No. 10 will be initialed by officer directing issuance of orders.

DO NOT WRITE IN SPACE BELOW

8. TO BE RELIEVED O/A U	9. ASSIGNMENT SLATED FOR V	10. INITIALS W

U. S. GOVERNMENT PRINTING OFFICE 16—55219-1

POST EXCHANGE

On Languages

I HAVE just read the fine article, "Light over Babel," by Max Sherover, which appeared in your September-October issue. Mr. Sherover effectively stated the language problem as it exists today, and he gave good advice as to the best modern method of learning other languages.

However, I regret that he did not carry the answer to the lingual difficulties of this world further, to the best solution of them all.

On page 29 there is a boxed quote from General Devers: ". . . many of the difficulties encountered . . . could have been more expeditiously and efficiently resolved if there had been a common meeting ground of language." Mr. Sherover should have pointed out that just such a common ground exists today—the World Interlanguage, Esperanto. This easy, logical and flexible language has passed the practical test of every sort of use during sixty years. Today it is spoken by several millions of people in countries throughout the world. Each year there is a world congress attended by delegates from at least thirty countries. All proceedings are carried on in Esperanto—everyone understands, and the language problem is no longer a problem at all.

You can imagine how much easier the armed forces of many nations could communicate with one another if each one would give a short course in Esperanto to every soldier destined for foreign service. Each man would know his own language, and Esperanto—the latter being the neutral passport of understanding, good in any country. This language can be learned much quicker and easier than any national language, and it has the added advantage of being neutral—no national sensibilities are injured.

I speak, read, and write Esperanto. My mail brings letters from many foreign countries, from men who speak no English—yet we communicate with ease.

There, Sir, is the real answer to the language problem. It is going to take a good deal of courage, a full measure of vision, to put it to official use. But to any clear-thinking person the rewards are obvious. Then truly the light over Babel will brighten until it illuminates all the dark corners of misunderstanding.

George W. Bailey, Jr.,
Captain, Air Force Reserve.

* * *

Bebs vs Debs

Bright vs Dull Eyes

ALL men can usually be divided into two general classifications (1) The Bright Eyed Boys and (2) The Dull Eyed Boys. Or short title: BEBs and DEBs.

It is important to anyone who exercises leadership or holds an executive position to be able to tell the BEBs from the DEBs. He needs conscientious men for some jobs, and work horses for others. But for certain key positions he must have men with imagination and a sense of proportion; they must be able to see into the future and anticipate problems . . . and men who have these qualities are the Bright Eyed Boys, the BEBs.

Please do not misunderstand me: Almost all DEBs are valuable men on the right job, but to place a Dull Eyed Boy on a Bright Eyed Job will result in a double failure—because his failure is also a failure of the man who selected him for that job.

This poses the question, "OK, so how do you tell the BEBs from the DEBs?"

Well, there are a lot of ways of doing this, but mostly it is just up to the judgment of the man making the selection. As one type of aid to judgment, here is an example of a concrete approach to the problem which can be used in some cases.

During the war a division chief of staff (while still in a staging area) was instructed by the division commander to obtain liaison officers from the three regiments—each liaison officer to be selected by his own regiment.

Since these liaison officers would also serve as assistant G's, it made quite a lot of difference whether they were BEBs or DEBs.

Maybe you can guess what happened: The regiments—one in particular—selected animals that looked sound of wind and muscle, but who were slightly lame in the head. As a result a little test for another set of candidates was evolved.

This test required each man to draw a freehand sketch of the floor plan of division headquarters—just a rough outline of the main offices (all of which were of different sizes and shapes). In addition each candidate wrote a single page essay on what characteristics he thought a good staff officer should have.

Of course there was a personal interview too.

The handwriting and grammar, along with the ideas expressed in the short essay, helped to eliminate some of the candidates hopefully offered by the regiments for adoption. But it was the rough sketch of the headquarters floor plan that proved the best indication of whether or not the candidate was a BEB or a DEB.

Artistic ability was not the thing that counted. It was whether or not the completed drawing was generally centered on the page—showing that the man who drew it had mentally visualized the whole drawing before he started to draw a part of it. Also the relative size of the rooms was a clear indication of whether or not the candidate viewed things in their proper perspective. If the sketch showed the G-2 office much larger than the G-3 office, when in actual fact the G-3 office was the larger, this indicated he viewed things one at a time—and not in relation to each other.

On the other hand, those who turned in simple rough sketches generally centered on the page—with the various offices in the proper size with relation to each other—these were the BEBs who proved themselves good planners, who could see ahead and separate the real problems from inconsequential details.

It is not always feasible to hold a formal test, of course. But in selecting an officer to fill a job that definitely requires a BEB, it is easy to assign the candidate some job that requires a written report. Suggested type reports (tests) are: To investigate and report on an automobile accident; to submit a plan for a combat range; or the general layout for a proposed athletic plant . . . and there are many others.

These little reports will test the officer without his knowing that he is undergoing such a test—and aid in determining whether or not he is one of the Bright Eyed Boys.

RIPOSTE.

* * *

LIEUTENANT COLONEL ARTHUR HARRIS' article in the July-August issue of the ARMORED CAVALRY JOURNAL is slightly remiss on two or three counts which I feel are rather important to the History of Armor.

May I set these down as follows:

1. The Battle of Alamein could never have achieved such a thundering success had it not been for the German-Italian attack on the 31st of August, 1942, which was Rommel's "do-or-die" operation. This attack developed into what is now known to history as the Battle of Alam Halfa. This battle lasted seven days. 21 and 15 Panzer as well as 90 Light made deep penetrations into the British lines. In some cases these penetrations were 28 to 30 miles in depth. An attempt to cut off these units was made on the night of 3/4 September. This action, fought by the 2 New Zealand Division, was not successful, but severe casualties were suffered by the enemy. On the seventh of September the battle was drawn to a conclusion with the enemy still in possession of the western end of the British FDL.

It is interesting to note that neither of the two "crack" Italian Armored Divisions (Ariete and Littorio) were able to breach the British mine fields.

2. The Battle of El Alamein was begun on the *23rd of October* and not on the 31st. There was a constant din and dogfight from the 23rd until the 4th of November, 1942, when the actual breakout and pursuit started.

3. Colonel Harris states that the 8th Army did not catch the Afrika Korps until the 18th of February 1943. That is not correct. Heavy Armored fighting occurred at El Agheila 13 through 19 December, 1942, and again a definite stand was made by Rommel at Buerat and a battle was fought 15 through 23 January 1943, preceding the entry of Tripoli.

The fight for a respite for American II Corps (being hard pressed from the Kasserine toward Tebessa from Gafsa) did not take shape until 24 February 1943. At this date the 7th British Armoured Division and 51st Highland Division began to press the actual Mareth Line, causing Rommel to break off his attack against the Americans; and 21st Panzer was sent hurriedly to face the Eighth Army again.

The entire German Panzer strength set out to crush the "administratively stretched" Eighth Army. This action, employing the 10th, 21st and 15th Panzer Divisions attacking in three columns, was culminated in the Battle of Medenine in which the Germans lost 52 tanks of all types to infantry and antitank weapons. Only one British Squadron of Tanks engaged (British Squadron equals the American Troop in strength) and these accounted for only seven enemy tanks. In this battle the British *employed no mines* and *lost no tanks*. This action led to the success of the battle for the Mareth Line, which followed—and I consider it an absolute parallel to—the Battle of Alam Halfa, which led to the victory at Alamein.

The battle for the overrunning of the Mareth Line started on the 20th of March and ended in the brilliant success at El Hamma on the 29th, secured by the New Zealand Corps (temporary designation) and the 1st British Armoured Division, assisted by General LeClerc's Free French component group.

I sincerely hope that this letter will be taken in the proper light and will be considered as merely a refresher and a point for discussion and mutual interest.

CORPORAL CASILEAR MIDDLETON,
(Formerly a lieutenant with the 1st
Royal Dragoons and the Royal Canadian Dragoons, 1941-45, Eighth Army)

* * *

I HAVE enclosed a personal check for a renewal of my subscription to your magazine.

If your November-December issue turns out as well as it appears it will you will have made an excellent solid contribution to keeping reserve officers up to date. The weakness of the present reserve program has made it necessary for many officers to rely on the service journals to keep them abreast of military developments. Keep up the current information on the status of armored troops throughout the world.

ARTHUR G. VOLZ, JR.,
Major, MI-Reserve.

HENRY C. PORTER

OPERATION LEARNING

Mr. Porter, Civilian Instructor in the Instructor Training Division of The Armored School, covers a subject of primary importance to all service personnel.

FOREWORD

One of the most frequent complaints of students attending The Armored School is, "I have been out of school for so long that I have forgotten how to study."

OPERATION LEARNING is a suggested solution to the problem of how to realize the most learning from the time and energy spent in study. The "S-ARMOR" method of study, as explained herein, and the suggestions on how to pass examinations are based on established principles in the field of educational psychology. Similar methods have proved sound not only in theory but also in practice at our colleges, universities, and service schools.

I believe that application of the principles contained herein will prove a key to more effective learning.

(Signed) BRUCE C. CLARKE
Brigadier General, USA
Assistant Commandant

PLANNED APPROACH TO STUDY

AS a student you will learn many things which will be valuable to you in the advancement of your career. In addition to the military skills and knowledge, which will become the tools of your trade, you will acquire new interests, attitudes, appreciations, and work habits, which will be of equal or greater importance to your professional growth. If you will think back to your last school experience you will probably realize that a great deal of the detailed information learned in school is soon forgotten; the techniques used in solving problems, the basic principles, and the habits of study, however, remain as an indispensable part of your education. A well-educated man is not necessarily one with an encyclopedic mind, but rather he is a man who knows how to learn the things he needs to know for the accomplishment of his objectives. In order for you to be well educated in your profession you must know how to study effectively.

Like a military campaign, an effective study program is to a large extent a matter of planning. The demands upon the student for learning and retaining large quantities of subject matter are greater in The Armored School courses, for example, than in most colleges and university graduate schools. Other military service schools are likewise upping their requirements. It is, therefore, essential that the student of the future spend his study time as efficiently as possible. Efficiency calls for a plan; without a planned approach your study becomes strenuous. Efficiency brings greater results with lessened effort; strenuousness brings results with abnormally greater effort. In this article a plan is submitted which should enable you to develop efficient study habits.

Investigations have shown that most students can save from one fourth to one third of their time if they systematize their study efforts. Effective methods will help the student understand and remember what he is studying. Take inventory of your study habits, and if you find that you do not have a planned approach, apply the study techniques suggested here; they will produce results.

THE S-ARMOR METHOD OF STUDY

The objective of a student at The Armored School is to *study armor;* therefore, let us call our method of study the S-ARMOR method. The title for this study technique is designated in this way to make it easier for you to remember and apply; just think of your objective as a student—*study armor*—and you have the steps which the student uses in this method. The meaning of this mnemonic device is:

S urvey
A sk questions
R ead
M emory devices
O rganize
R eview

SURVEY. Your first step in the study process is to glance over the chapter headings and topic headings; if the chapter has a summary paragraph this will also list the ideas developed in the chapter. This will give you an over-all view of the material and will assist in your later reading. You will see how the parts fit together into the unit and then when you read the assignment, ideas will be meaningful and related. Some students like to make this survey several hours before the study period, or when they plan their activities for the evening. This orientation will help you to unify the ideas as you read them later.

ASK QUESTIONS. Make your study active by mentally rephrasing chapter titles and topic headings as questions. If you practice this, it will soon become an unconscious habit which will set your mind to receive and remember the essence of the material at hand. If you have this mental habit set, important points which answer your question will stand out, and the explanatory details will take their subordinate place in your reading. This practice will enable you to read with a purpose: to answer the questions you raise mentally. The skill which you develop in formulating these questions will determine the nature of your reading. If your question is well formed you may "skim" through the material. Skimming is no different from ordinary reading, except that no time is wasted reading the wrong things. Spend no more time in reading than is necessary to answer the meaning of questions relating to topic headings.

The approach to study suggested in these first two steps was recommended by John Morley, an eminent British scholar and statesman, who said,

> "Some great men—Gibbon was one and Daniel Webster was another and the great Lord Stafford was a third—always, before reading a book, made a short rough analysis of the questions which they expected to be answered in it, the additions to be made to their knowledge, and whither it would take them. I have sometimes tried that way of studying and guiding attention; I have never done so without advantage, and I commend it to you."

READ. Read for *meaning;* read to answer the question which you have mentally phrased from the topic headings. Your reading then becomes not a passive plowing along each line, word by word, but an active search for the *answer.* Here is where many students confuse reading with study; reading is not study, but one phase of the study process. When you study, your reading rate will vary. Some topics can be read by *skimming;* other topics, about which you already have considerable knowledge, may be read by using *judicious skipping* in which reading only topic sentences here and there gives you the meaning you seek. The good reading habits which you learn in your course in *Improvement of Reading* should be employed in your study. As a rule, outstanding students are quick readers. Speed is important because it enables you to read and review materials in a limited period of time. Your rate of reading, however, will be governed by your *understanding.* Do not hesitate to stop and think things over; but don't let this be a time when your mind wanders. In other words, read slowly enough to grasp the meaning, and yet push yourself for more speed; this is the key to training yourself for rapid and efficient reading in study.

MEMORY DEVICES. Here are some suggestions as to aids which students use to help them remember the things which they have studied:

(1) *Underlining.* This technique is useful in designating important points to be considered and learned. A text (your own) which has been underlined is much easier to use in a review. Instructional materials such as advance sheets and precis should always be underlined for ready reference in class. Keep these things in mind when you underline:

(a) Read a whole passage before underlining any part of it.

(b) Underline only the key passages—avoid excessive underlining.

(c) When you underline for a special purpose, use a double line.

(2) *Marginal notes.* Do not hesitate to make marginal notes on your instructional materials. These will help you to find an idea in the review and give meaning to your underlining. Do not overdo it.

(3) *Outlining.* After material has been read, your objective is to remember it as long as possible. It is a well-known fact that forgetting sets in as soon as learning has stopped; therefore, in order to learn something to be remembered for some time, there must be a frequent recall of the main points. There is no better way to effect this recall than to refer to a set of well-prepared notes which have been outlined so that the organization is clear. Here is a sample outline of this article; notice the method used in designating main points:

OPERATION LEARNING

1. PLANNED APPROACH TO STUDY.
    a. *Importance of study habits.*
        (1) Subjects learned in school are often forgotten.
        (2) Habits of study stay with you.
        (3) Knowing how to learn is an important asset.
    b. *Need for a planned approach to study.*
        (1) Great academic demands upon student's time at present-day military schools.
        (2) To spend study time efficiently.
        (3) Students save from one third to one fourth of their time through systematized study plan.
2. THE S-ARMOR METHOD OF STUDY.
    a. *Survey.*
    b. *Ask questions.*
    c. *Read.*
    d. *Memory devices.*
        (1) Underlining.
        (2) Marginal notes.
        (3) Outlining.
            (a) To help recall.
            (b) To help organize.
    e. *Organize.*
    f. *Review.*
3. HOW TO PASS THE EXAMINATIONS.
    a. *Reasons for examinations.*
        (1) Motivate and stimulate learning.
        (2) Provide practice in the things learned.
        (3) Indicate student progress.
        (4) Enable objective grading of performance.
    b. *How to prepare for an examination.*
        (1) Review intelligently.
        (2) Don't cram.
        (3) Study with a group.
        (4) Schedule your time.

c. *How to take an examination.*

(1) Proper mental attitude.

(2) Read the problem.

(3) Work vigorously.

(4) Watch your time.

ORGANIZE. After you have read one topic of the lesson, look up from your study and try to briefly recite the answer to your question. Try to think of an example from your Army experience which fits the reading selection. Think how this material might be used in future situations. Associate the newly learned material with other parts of the course and with kindred courses. This organization of your thinking is an important step in the study process; it serves as an aid to the comprehension, unification, and fixation of ideas and facts. In this step the materials studied are made an integral part of your store of knowledge.

Now repeat steps A-R-M-O (Ask questions, Read, Memory devices, and Organize) for each succeeding topic in your assignment. Study this way until the entire lesson is completed; then you are ready for the last step in the S-ARMOR method of studying.

REVIEW. Now, in order to get an over-all view of the complete assignment, review the lesson as a whole unit. Look back over your outline, notes, and underlining. This review should be made the same night as the study. Later reviews are valuable because of the forgetting which takes place when material is not frequently recalled.

It has been found that more is forgotten in one day when retention is unaided by recall through reviews or other means than is forgotten in two months when retention is aided by recall. Reviews should be planned with the specific purpose of establishing retention of learning. Review materials as the last step in the study process, and then arrange to recall the important points at later intervals. The learning and retention which result from these reviews might well be termed "mental digestion" because of the complete assimilation of the materials learned. Short reviews over an extended period of time are more effective than the same amount of time spent in one or two periods. This problem of distributing learning periods is one which the student must understand if he is to employ effective study techniques. The following suggestions will hold true in most cases:

(1) If the learning task is relatively short and easy, the first learning may be most economically achieved by massed effort rather than by distributed effort.

(2) If the learning task is long or difficult, as is the case in courses at The Armored School, distributed effort will save time and energy. In a course distributed over several months, say three hours per week, there will be greater mental digestion and maturation than when the same course is presented in a compact block. The learning in this case will be more functional when the opportunity for mental digestion is presented, and the student will be better prepared to use the learning in real life.

(3) In the early steps of the establishment of learning, frequent—perhaps daily—practices are desirable. The intervals between practices may be gradually lengthened until further review is unnecessary.

(4) It is usually held that relatively short practice periods result in the best returns for a given expenditure of time. The length of the period depends upon such things as the background of the learner, the nature of the learning activity, and the degree of the habituation desired.

Here is a selection on the subject, "How To Study," which you should know. Let us apply the S-ARMOR method of studying to this selection.

EXAMPLE

S-ARMOR Technique

S urvey: Glance at the headings. You will see that the selection deals with *How To Study* and that problems of study are discussed. At a glance you will see that some solutions to these problems are suggested.

A sk Questions: Now let us start on the first topic. The mental question might well be, "What are the problems related to *How to Study?*"

R ead: Read the first topic to find the answer to your question.

M emory Devices: Underline, use marginal notes, and outline. Use these devices as you study this selection.

O rganize: Look up from your study and try to answer the question, "What are the problems related to *How To Study?*" If you can answer correctly, repeat steps ARMO in studying the next topic.

R eview: When you have finished all topics look back over your underlining, notes, and outline. Consolidate the materials learned.

Selection

HOW TO STUDY

Problems. Every type of studying is different and presents its own problems. It may seem futile to attempt to give general advice on how to study when there are so many divergent factors involved. There are, however, elements which are common to all study. These elements are (1) the control of attention in securing the most favorable attitude of work, (2) common principles of assimilation and retention of material, (3) proficiency in reading. Problems involved in all these elements would be: what are the study processes, and how may these processes be facilitated?

Control of attention. One of the chief sources of waste in studying is the reluctance to begin the task. This inertia on the part of the student can be overcome through two general procedures. One is to grit one's teeth and go to it; that is, simply to force oneself to begin the task. The other is to put oneself into physical surroundings and into a frame of mind which are conducive to study. Here are some suggestions for directing your energies toward the most effective control of attention: (1) Put yourself into a proper physical and bodily attitude for work. Sit at your desk. Do not start your study period by reading the newspaper. Have a set place to study. A set time is also good. (2) In so far as possible, work in surroundings in which there are absolutely no distractions. Studying with the radio going is wasteful. Any other distraction reduces efficiency. (3) Begin work. There's nothing better for overcoming inertia than to start through the motions of study.

Common elements in the assimilation and retention of material

(1) Take the problem-solving attitude. Know what you want to find. Ask questions and then look for the answers.

(2) Read with a purpose. Understand what you want to assimilate and retain.

(3) Organize ideas with reference to larger ideas and principles. Associate your new material with what you already know.

(4) Recall at intervals the essential ideas you have read. Do this when you study, and at intervals of a day or so apart. This will stop the rapid decline in that forgetting curve.

(5) Use the ideas acquired as soon as possible. Talk to your associates about them, think them over, or discuss them in class.

(6) When committing material to memory, learn by wholes rather than by parts.

Improvement in reading ability. The average student reads too slowly; in fact, more slowly than he is capable of reading. Force yourself to read faster. Continuous effort and practice in this direction will materially increase the rate of reading. Speeding up the rate also tends to stimulate greater concentration of attention upon the whole thought content. Stop frequently to recall the essential ideas read. Acquire the habit of looking for the essential ideas. Another valuable practice is to take tests at frequent intervals.

HOW TO PASS THE EXAMINATIONS

WHY EXAMINATIONS?

Contrary to the traditional student viewpoint, examinations are not "necessary evils" of our military educational system. The examination serves a useful purpose in any program of instruction and should be looked upon as a part of the learning process rather than an undesirable hurdle to be cleared. The evaluation program at The Armored School, for example, will do these things for the student:

(1) *Motivate and stimulate learning.* The examination forces you to review and organize your material —something you should do anyway but often wouldn't without this incentive. It is an established principle of learning that students learn more when they know that they are going to be held accountable for the material covered.

(2) *Provide practice in the application of things learned.* The examination often provides the only immediate application of the knowledge and skills acquired. Certainly the practice in thinking under the stress of the testing situation will increase your ability to apply the things learned in a real situation later. There is a high correlation between ability as shown by success on examinations and ability to apply knowledge and skill in the solution of real live problems. The examination provides a great deal of functional and educative practice.

(3) *Indicate student progress.* Passing an examination symbolizes mastery of a subject about as well as is possible in the instructional situation. Examinations reveal the student's strength and weakness; they often indicate what is expected of the student, and further indi-

cate the important points to be learned from a course. When properly used they are diagnostic; the student finds the subject materials in which he needs further study. Under no conditions should the examination be looked upon as a goal, the end of the course, or something to "get done with."

(4) *Enable objective grading of performance.* Your performance on the examination is one means of demonstrating your ability as a student. You would not want to be operated on by a surgeon who had never shown his ability by passing a rigorous "state board"; it is just as important to protect the standards in your profession. The good student wants to do well in his class and receive a grade which will proclaim this fact to others. No one will say that every man in your class should receive the same grade. The examination is the only fair means of evaluating your performance and assigning grades objectively.

HINTS ON HOW TO PREPARE FOR AN EXAMINATION

(1) *Review intelligently.* Learning is not something that happens instantly. It is a process of growth which includes initial learning, remembering, forgetting, and relearning. This relearning is commonly called reviewing and is a vital part of the retention of learning. The suggestions which have been given for study apply here.

(2) *Don't "cram."* Cramming has been defined as the act of hastily filling the mind with information for a temporary purpose. Crammed material is unconnected and misconnected, soon forgotten, rarely understood. This type of "boning" often fails to accomplish even the limited objective of passing the tests. The new type examinations require the application of knowledge to problem type situations rather than the rote memorization of details. Cramming on the part of the student is his admission that the examination, not learning, is his goal; he is trying to "get by," and is not too much concerned with his professional growth. This type of so-called study represents mental, emotional, and physical debauch and leaves the student in no condition to take an examination.

(3) *Study with a group.* This is a very effective way to prepare for an examination if the meeting is organized, the group is small, and the members are equally interested. But—beware of the "bull session."

(4) *Schedule your time.* Arrange your activities so that your preparation is completed some time before the examination. Review of the materials to be covered in the test the night before examination is good, but if it requires an all-night session you have put it off too long. Plan your review so that some time is left for rest. This enables your thoughts to mature, and you will approach the test refreshed mentally and physically and settled emotionally. When preparing for two or more examinations, keep your review periods separate.

HINTS ON HOW TO TAKE AN EXAMINATION

(1) *Proper mental attitude.* The examinations which you will take while at the School represent the instructors' best efforts in test construction. In many cases these test items have been tried out before and have been found to be valid. If, however, a so-called "bad question" appears in a test, do not indict the entire program; it will only affect your own performance. Some students let one or two poor questions upset them to the point where they expect all questions to be "curve balls." Remember that the examination is not a contest between the student and the instructor; your instructor has made every effort to write a good test; he has tried to make every question clear without giving away the answer. Accept the test as a challenge to your ability, and keep in mind that the instructor wants you to do well because that means he has done his job well.

(2) *Read the problem.* Make a preliminary survey of the entire test to see that you have all the pages, to determine the nature of the examination, and to set up your over-all approach; this procedure will save you time in the long run. In answering the questions be sure to read each question carefully; this does not necessarily mean slowly, but with attention, concentration, and understanding. Do not read something into the question; students often let their thinking go off on a tangent by allowing their past experiences to affect their interpretation of ideas in the test. *Students who know their subject miss more questions because of failure to read the problem than for any other cause.*

(3) *Work vigorously.* Your mental activity will be very much influenced by your physical activity or the lack of it. Listlessly waiting for an inspiration, daydreaming, or looking around the classroom will never bring the answer to a question. An aggressive and determined attitude toward the task at hand will stimulate your best thinking. Do not allow yourself to be distracted by things happening in the classroom which you think should not happen. Some students raise questions after the examination has started; if these are of general importance the instructor will call your attention to them. In most cases, however, your best judgment is better than any clarification of difficult points which can be given by the instructor after the examination has started. *Work hard when you work* is sound psychology when applied to examinations.

(4) *Watch your time.* The amount of time which you can spend on the examination will be announced by the instructor before you start; don't "fight the problem" by thinking that it is not adequate. Make up your mind to finish the test with a good mark. Make every effort to finish your paper in time to go back and reread your answers. This does not mean that you will hurry through the examination with speed as the primary consideration; in most cases haste makes waste. If a question is difficult or if you cannot seem to get the answer in the normal time, skip it and come back to it. Unless the test is to be corrected for guessing, do not leave

blanks; answer all questions. After all, there is very little difference between a good guess and judgment, especially if the guess proves to be correct. Check your progress as you take the test and you will find your proper rate; do not be one of those students who is surprised by the bell when he is half finished.

STUDY-HABIT INVENTORY

Directions: This is a self-test. Take the test and then score your responses. The key follows the test. Each disagreement with the key probably indicates a bad habit or an attitude to be corrected. Answer each of these questions by writing in one of the following numbers: (1) Never, (2) Seldom, (3) Sometimes, (4) Usually, or (5) Always.

______ 1 Do you have trouble "getting down to work" at the beginning of a study period?

______ 2. Do you have a set place where you study?

______ 3 Do you study late into the night or even all night before important examinations?

______ 4 Do you study with the radio going or with persons talking in the same room?

______ 5 Do you daydream in class or when you should be studying?

______ 6. When you find a new word while studying, do you look it up in the dictionary or other reference books?

______ 7 Does your school work prevent you from engaging in social activities?

______ 8 Do you take notes in class as fast as you can write?

______ 9. After reading a topic do you think of its meaning and try to recall the ideas presented?

______10 Do you read all your assignments at about the same rate?

______11. When you make an outline of materials studied, do you phrase the main points in your own words?

______12. Before you begin an assignment, do you look it over and plan an order of procedure for learning the material?

______13 Do you feel that the objective of your study is primarily to pass the tests?

______14. Do you mark important points in your textbook, advance sheet, or precis so that these points can receive special attention when you review?

______15. Do you ask your associates questions about materials studied?

______16 Do you have trouble covering all your assignments?

______17. Do you follow a definite study-plan?

______18. Do you schedule your time for study?

______19. When a school solution is presented, do you try to understand the justifications for that solution without fighting the problem and closing your mind to its merits?

______20 When you read an assignment do you usually read it from beginning to end without stopping?

______21 Do you sometimes discover, after reading several pages, that you do not know what you have read?

______22 Do you sometimes have difficulty in understanding your own notes and outlines?

______23. Do you make frequent recall of the materials presented in a course just to fix them in your mind, even though there is no pressing need, such as an examination, at the time?

______24. When you finish an assignment do you review it immediately?

______25. Do you frequently rephrase topic headings as questions and then read to answer those questions?

______26 Do you move your lips or mumble while studying hard passages?

______27 When you read an assignment over do you consider that you have studied it?

______28 Having a four-hour assignment, would you try to complete it in one study period rather than at several different times?

______29. When you take an examination do you leave difficult questions and return to them later?

______30 Do you feel that you have to spend too much time studying?

KEY

The questions whose numbers are followed by *periods* should be answered "Usually (4)" or "Always (5)," while those question numbers not followed by periods should be answered "Seldom (2)" or "Never (1)." Few students can honestly answer all these questions correctly; a good student should answer about 25 out of 30 correctly. If you miss over five questions more attention should be given you your study techniques.

Books make excellent Christmas Gifts

Consult the Book Section

NEWS NOTES

Armored Cavalry Reserve

The Department of the Army has announced (1) The Armored-Cavalry Section (Armd-Cav-Res) is established as a section of the Organized Reserve Corps of the Army of the United States; (2) All officers and enlisted men in the Armor Reserve and the Cavalry Reserve are transferred to the Armored-Cavalry Reserve; (3) The Armor and the Cavalry Reserve Sections of the Organized Reserve Corps of the Army of the United States are abolished.

* * *

Generals Cramer and Parker Discuss Place of Military Police in Guard

The importance of Military Police units in the National Guard and plans for further cooperation were discussed by Major General Kenneth F. Cramer, Chief of the National Guard Bureau and Major General Edwin P. Parker, Jr., Army Provost Marshal General at a meeting in Washington Wednesday, September 15, 1948. Also discussed was the seventh anniversary of the Corps of Military Police which was celebrated on the 26 of September, ten days after National Guard Day which all Guard units celebrated.

Generals Cramer and Parker, both onetime officers in the 78th Division, one in World War I, the other in World War II, discussed the National Guard program which includes MP platoons in each of the two armored divisions; MP companies in each of the 25 infantry divisions and 16 separate MP battalions.

General Parker, who served as a National Guard instructor in Virginia prior to the recent war is thoroughly familiar with the Guard program. He has already inspected a number of Guard MP units and expressed himself as highly pleased with the state of training and the caliber of the men and officers.

* * *

Reserves To Take Important Part In Organization of M-Day Force

The Organized Reserve was given an important role by the Army in plans announced for further organization of an M-Day mobile striking force.

Many Reserve officers are receiving mobilization assignments in Organized Reserve units in which they will be prepared to serve in the event of military emergency. Such units will be designated as elements of the proposed striking force.

In general, mobilization assignments will be given Reservists in units supporting combat divisions of the M-Day force. In other instances, assignments will be made to training units especially organized to train officers according to their military specialties. Where assignments of this nature are prohibited by geographical residence of the individual officer, assignments may be made to authorized governmental agencies necessary for National Defense, or to posts, camps and stations near their homes.

The plan will give the maximum possible number of Reservists definite assignments in keeping with their military and civilian qualifications and will enable rapid mobilization of striking force units should the need arise.

Responsibility for mobilization assignments of all Reserve officers on extended active duty and others whose assignments are controlled by the Department of the Army has been delegated to the Director of Personnel and Administration, Army General Staff. Commanding generals of area commands are engaged in giving mobilization assignments to members of the Officers Reserve Corps not on extended active duty or otherwise not under Department of the Army control. These include Reserve officers now holding enlisted grades or warrant officer appointments in the Regular Army.

Assignment vacancies exist in units of all branches of service, including Armored Cavalry, Coast Artillery, Field Artillery, Engineers, Medical Department, Signal Corps, Quartermaster Corps, Intelligence, and Ordnance.

* * *

Last of American Forces in Action Series on Sale

The last volume of the Army Historical Divisions American Forces in Action series, UTAH BEACH TO CHERBOURG, is now on sale.

UTAH BEACH TO CHERBOURG tells how the right wing of the Allied forces that landed in Normandy isolated, and finally captured, the great deep-water port of Cherbourg. The attack began with a parachute drop of more than 13,000 men on the night of June 6-7, 1944, followed by a three-division amphibious assault. These forces swept westward to cut off the Cotentin peninsula, and then attacked Cherbourg from the South. In the final assault on the city, they received the greatest amount of direct air support ever provided for American Infantry up to that time. The main units participating in this action were the 82nd and 101st Airborne Divisions and the 4th, 9th, 79th and 90th Infantry Divisions.

Author of this volume is Major Roland G. Ruppenthal, who was historian of the VII Corps, and came ashore at Utah Beach on D-Day. Major Ruppenthal received a Bronze Star for his service as a combat historian and is now a civilian employee of the Historical Division.

Veterans of any of the armed services who present documentation that they were wounded while participating in the Utah-Cherbourg operation, June 6 to July 1, 1944, may obtain a free copy of this volume from the Historical Division.

* * *

New Engines Made for Military Use

Heavy-duty air-cooled type is put out in six models by Continental Motors.

A new line of heavy-duty air-cooled engines for use in military vehicles was announced by C. J. Reese, president of the Continental Motors Corporation. The six models range from 125 to 1,040 horsepower.

As these power plants did not require radiators, water pumps and other cooling accessories, their lightness in weight and compactness were particularly adaptable for military vehicles where pay load and cargo space were important factors, according to Mr. Reese.

Another feature emphasized by him was the simplicity of design and interchangeability of parts which assured quick mass production and facilitated repairs and maintenance. He added that they would operate under extremes of temperature.

It was announced that there were only two basic cylinders of 4⅝- and 5¾-inch diameter and increased power was obtained by increasing the number of cylinders and by stepping up the compression ratio in the basic cylinder models.

* * *

National Guard Divisions Increase Fire Power, Mobility

Organizational changes which will increase materially the fire power and mobility of the National Guard's Infantry and Armored Divisions were announced by Major General Kenneth F. Cramer, Chief of the National Guard Bureau.

The change parallels reorganization of Regular Army Divisions which was announced two years ago.

They are based on revised Tables of Organization and Equipment which utilize the battle experience of World War II.

Major revisions are:

Each of the 25 infantry divisions in the National Guard will add a self-propelled Anti-aircraft Artillery (Automatic Weapons) Battalion and a Heavy Tank Battalions.

Each of the two National Guard armored divisions will add a self-propelled 155mm Howitzer Field Artillery Battalion and a self-propelled Anti-aircraft Artillery (Automatic Weapons) Battalion.

The 96th infantry regiments in Divisions and Regimental Combat Teams in the National Guard troop basis will heavily increase fire power by adding a heavy tank company and a heavy mortar company in place of an anti-tank company and a cannon company.

National Guard strength of the infantry divisions will be increased to approximately 14,000 officers and men; of the armored divisions to some 12,000. The old peace or reduction strengths were approximately 13,000 and 9,000, respectively, or 80 per cent of full combat strength.

Full strength of infantry divisions is expanded to about 19,000; of armored divisions to about 16,000. The old figures were approximately 16,000 and 11,000, respectively.

Other changes include the addition of various service troops to the divisional basis, including additional medical and mess personnel.

Reorganization, which started October 1 and is expected to be completed by the early part of the next calendar year, will become effective for all organizations of a given type in the National Guard, such as separate companies, battalions and regiments, until complete divisional reorganization is accomplished. Effective dates for the reorganization of the various types of National Guard organizations will be announced from time to time by the Chief, National Guard Bureau, as the new Tables of Organization and Equipment are printed and distributed to the field.

Reorganization will be carried out first by the infantry divisions, followed approximately a month later by the armored divisions. Revised T/O&E's will be applied thereafter to other National Guard units as soon as possible.

* * *

Key National Guard Ground Officers to Get Airborne Indoctrination

Indoctrination in the tactics of airborne operations was given key National Guard officers by the Tactical Air Command in cooperation with the Army Field Forces, in courses conducted during October at Eglin Air Force Base, Florida.

Approximately 50 National Guard officers of Army units of the Command and Staff level, preferably Division and Combat Team commanders and training officers, attended the special three-day Air Indoctrination Courses. The courses were given during October 10 to 13, 17 to 20 and 24 to 27 and included demonstrations in air-ground operations.

"Training in airborne operations will be emphasized increasingly, since the National Guard as a first phase M-Day force must be prepared for immediate air-ground operations," according to Maj. Gen. Kenneth F. Framer, Chief, National Guard Bureau.

During field training this summer an entire National Guard Division, the 34th of Iowa and Nebraska, was given a thorough grounding in air transportability by instructors from the Air Tactical Command in conjunction with the Army Field Forces.

* * *

Certificate of Commission Standardized for Entire Military Establishment

A standardized Certificate of Commission for all officers of the National Military Establishment has been authorized by Secretary of Defense James Forrestal.

The new form is being engraved and will be put into use within the next three months for all new commissions, promotions or other changes in grade or rank in the Army, Navy, Marine Corps, Air Force, their Reserve Components, and the Coast Guard. It will be issued alike for all ranks and grades from General to Second Lieutenant, from Admiral to Midshipman.

The standardized certificate, which will replace more than 40 forms of varying styles and sizes now used by the armed services, will be engraved on fine artificial parchment, 11 by 14 inches. Current forms range from genuine parchment, 16 by 20 inches, for Generals and Admirals, to an Army Interim Commission Certificate printed on bond paper, 3½ by 8 inches.

* * *

Four Mechanized Cavalry Squadrons Organized by National Guard

Four of the 15 Mechanized Cavalry Reconnaissance Squadrons in the National Guard troop basis have completed organization, Major General Kenneth F. Cramer, Chief, National Guard Bureau, announced recently.

Federal recognition of Troop E, Raymonville, completed organization of the 112th Mechanized Cavalry Reconnaissance Squadron, one of two allotted Texas. Previously organized were the 211th Mechanized Cavalry Reconnaissance Squadron of Massachusetts; the 107th Squadron of Ohio and the 115th Squadron of Wyoming.

* * *

New Source of Radio Crystals

Quartz, one of the most common of all solid minerals and essential in the manufacture of efficient radio apparatus, has been produced synthetically in high grade quality under sponsorship of the Signal Corps Engineering Laboratories at Fort Monmouth, N. J.

Other minerals with some qualities similar to quartz, but not as common, including tourmaline, nepheline and aluminum phosphate, also have been made successfully. Several commercial firms and colleges under research contracts to the Signal Corps have shared in the success of this program.

* * *

National Guard Staff Officers Get Special Training Program

National Guard staff officers will be able to advance their professional training at home with a minimum loss of time from their civilian pursuits through special staff training programs being developed by the Army, it was announced by Major General Kenneth F. Cramer, Chief of the National Guard Bureau.

"This program, which takes into account that National Guardsmen must carry through two jobs—civilian and military—is meant as a supplement to the Army school system, not as a substitute," General Cramer said.

"Whenever possible National Guard officers will continue to take advantage of the specialized and advanced professional training available to them through the widespread system of Army schools."

The Army Field Forces, which is responsible for supervising the training of Army units of the National Guard, already has developed a "home-training" command and staff course for Division staffs. The course is being sent to each division commander of the National Guard in sufficient quantity to conduct training of his staff. It is a modification of the regular courses given at the Army Command and General Staff College.

* * *

Immediate Commissions Offered Qualified Veterans

Qualified veterans of the Armed Forces who have completed two years of college can get immediate commissions as second lieutenants in the Officers' Reserve Corps under a plan recently announced by the Department of the Army. Successful applicants will be given two years active duty with the Army.

The program is part of an intensive Nation-wide campaign to rebuild the officer strength, particularly in the company grades. The expansion of the Army has created many openings in the officer grades.

The new plan provides one of the simplest and easiest means for qualified young men to attain commissioned status ever offered by the Army. Qualified applicants, of whatever previous rank in the Army, Marine Corps, Air Force, or Coast Guard, will be given commissions immediately, followed by a 12-week course in a branch service school to prepare them for their responsibilities as an officer.

The offer is open to men between the ages of 19 and 32, who have had at least one year's active service in any of the Armed Forces of the United States during the period December 7, 1941, and June 30, 1947. The educational requirements specify that the applicant must have completed two years at a nationally accredited college or university, and score at least 110 in the Army's General Classification Test.

Applicants must pass a physical examination and be approved by a board of officers. These boards are located throughout the United States, at Army posts and stations and at U. S. Army recruiting district headquarters.

This opportunity for commissioned status also is available to men now serving in the Army.

Because the policy of the Army is to encourage young men to complete their education, college students, or men scheduled to attend college at the time of expected entry on active duty, are not eligible.

Headquarters Operation In Armored Units

by Major George C. Fairbanks*

THE amount of recorded material pertaining to the operation of an armored unit's headquarters in combat is limited. The material contained in this article is based on the actual rather than the theoretical operation of the armored division. Some thought should be given to it, lest we all forget what was learned in the last war. In many cases, the course of battle will be influenced by the way the headquarters is operated.

Prior to the United States' entry into World War II, it was common practice to establish the headquarters in the field in some locality which would allow complete operation without interruption from the enemy. This meant the establishment of communication with the combat elements from a position to the rear, where the commander with the aid of a map and a staff could direct his units on the basis of the reports submitted. This method of headquarters operation was a carry-over from past wars, where gains in many cases were measured in yards rather than miles. With the introduction of the modern armored unit, with its mobility, speed, and shock action, this concept had to be abandoned. The headquarters of the modern armored unit must be in close proximity to its combat elements at all times in order to effectively control and coordinate their efforts. In some cases, armored units attempted to make use of the older method of headquarters operation, and either lost control of the battle area or suffered disastrous results. The methods and procedures outlined in this article are a result of research and of discussion with various personnel who made up the armored units in World War II. It in no way represents one division or one unit's procedure, but is the best over-all operation. This article is based on what was commonly referred to as the "light armored division" of World War II, which in many respects is similar to the present organization. Undoubtedly, in the future, drastic changes will be necessary with the improvement of armored vehicles and the resultant changes in warfare.

Before proceeding further it is best to consider and clarify the term "unit command post." TM 20-205, *Dictionary of United States Army Terms,* defines "command post" as follows: "Station of a unit's headquarters, where the commander and staff work. In combat, a unit's headquarters is often divided into a forward echelon and a rear echelon; the forward echelon is called the command post." In armor it is felt that the headquarters should consist of three echelons; namely, the commander's echelon, the forward echelon (CP), and the rear echelon. Each of the echelons has a specific purpose in armor, and is applicable to the battalion, combat command, and division headquarters.

First, let us consider the commander's echelon. The purpose of the commander's echelon is to supervise the execution of the unit's operations, and render prompt decisions. The location of the commander's echelon, therefore, must be well forward with the combat elements, which in all cases will place this echelon forward of the unit command post. In many cases the location will be dictated by the place at which the main effort is being made. Locating the commander's echelon forward of the command post has two distinct advantages. First, the commander receives his reports direct from his subordinates; and in many cases he can observe their actions, from which he is able to render prompt decisions and initiate changes to plans. Secondly, the commander being well informed has an amazing effect on the combat elements from the psychological point of view.

It is necessary for the commander's echelon to make reports to the next higher headquarters. In many cases the report will be made by the commander direct by voice radio. When such reports are made direct, however, it is necessary for the command post to monitor and record them. It is essential that all such reports be monitored or retransmitted by the command post so that they can be made a matter of record, and to keep the chief of staff or executive officer informed of the situation. Within the division, C-W radio will seldom be resorted to for rendering reports or issuing changes to plans during combat if the commander's echelon is kept well forward.

The forward echelon, as the definition implies, is the command post (CP); and its primary function is to act as a communication center or clearinghouse for all information. At this location the chief of staff or executive officer will preside, directing the actions of the staff and keeping the commander informed of the over-all situation. The command post must remain in communication with higher and subordinate headquarters, and also with adjacent, supported, and supporting unit headquarters. A report or information from any credible source received at the command post must be transmitted to the commander's echelon if it relates to the immediate situation or requires immediate action.

The question always arises as to where to locate the unit's command post. Locations must be selected from the standpoint of communication, situation, and security. Regardless of the size of the command post, security is derived in the majority of cases from the combat elements. Therefore, it must be kept forward where this protection is available. The situation in some instances will dictate the location of the command post. In fast-moving actions, the command post must be capable of operation while on the move; in slower situ-

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*The Armored School, Fort Knox, Kentucky.

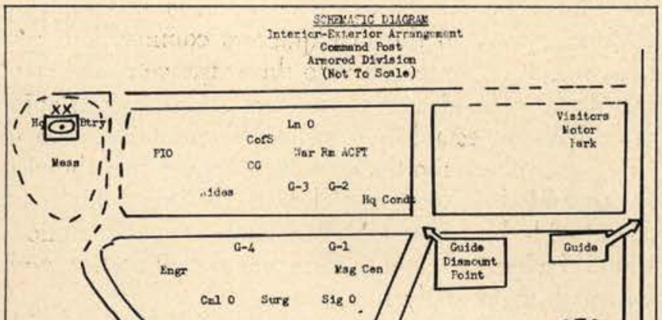
TYPICAL COMPOSITION TABLE
ARMORED UNIT HEADQUARTERS ECHELONS

Commander's Echelon Commanding officer Staff officers designated by commanding officer. Enlisted men to operate radios and vehicles	*Commander's Echelon* Commanding general Aide Staff officers designated by commanding general Enlisted men to operate radios and vehicles	*Commander's Echelon* Commanding general Aide Staff officers designated by commanding general Enlisted men to operate radios and vehicles
Forward Echelon Executive officer S-2 (if not with commander's echelon) S-3 (if not with commander's echelon) S-1 S-4 Commanding officer Hq & Sv Co Battalion motor (3) officer Battalion surgeon (1) Battalion combat trains (2) Headquarters commandant (3)	*Forward Echelon* Executive officer S-2 and special teams S-3 and air section Artillery liaison officer (4) Engineer officer (5) Surgeon Headquarters commandant Headquarters company combat command (-) Detachment military police Detachment div signal company	*Forward Echelon* Chief of Staff G-1 G-2 (and special teams) G-3 (and air section) G-4 G-5 (when provided by T/O or when attached) Division surgeon section (-) Division engineer (-) Division chemical officer Division signal officer Public information officer Division headquarters company (-) Division signal company (-) Detachment military police Division artillery (6) Headquarters commandant
Rear Echelon Elements with combat command or division trains	*Rear Echelon* S-4 Chaplains Supporting medical company Supporting ordnance company Unit transportation platoon (-) Engineer detachment, water point	*Rear Echelon* Headquarters and headquarters company division trains Adjutant General Finance officer Inspector general Judge advocate general Special service officer Chaplain section (7) Division surgeon section (-) Division ordnance officer (-) (8) Division quartermaster (9) Division administrative center (10) Division replacement company

ations the command post must be established temporarily and be able to displace rapidly. In the moving situation, coordination of the staff becomes more difficult; and in order to secure more effective staff action the command post should be established whenever possible. In the moving situation, a method of operating messengers within the command post column must be planned.

Communication largely will be the determining factor in selecting the command post location. In selecting temporary locations, consideration should be given to radio limitations. Valleys, depressions, and hill masses tend to limit communication. On the other hand, critical terrain features tend to expose the command post to enemy action. Common sense must be applied in selecting locations, bearing in mind that the function of the command post is that of a communication center for the unit. In many instances the commander's echelon closes with the command post at the end of the day's operations or when future operations are not in the immediate offing. Due to these considerations, no definite distance from the combat elements can be established for the location of the command post.

The rear echelon of the headquarters for armored units is located with the combat command or division trains. The function of the rear echelon is administrative. Referring again to TM 20-205, the definition of administration is "management and operation of all military matters not included in tactics and strategy." From this definition it can be seen that the rear echelon will consist of supply, maintenance, medical facilities and personnel sections not needed immediately by the combat elements. Each rear echelon will consist of elements of a number of various units, making it necessary to designate a commander at the combat command level to coordinate and direct movement. At the division level, the division trains commander performs this function. Security of the rear echelon is dependent upon the proximity of the combat units. At times it is necessary to give the rear echelon some combat elements to discourage ground and air attacks. In the table below, a suggested breakdown for each headquarters of the armored division is shown. This suggested breakdown may apply in one situation and not in another, and flexibility should be encouraged and changes made when necessary. The command post echelons as shown



for the battalion are based on the medium tank battalion, and interpretations must be made for the armored infantry battalion and supporting battalions.

NOTES:

(1) Battalion surgeon established aid station in close proximity to CP.
(2) Battalion combat trains are composed of medical, supply, and maintenance units to support the operations.
(3) Headquarters commandant not specifically authorized below division level appointed as additional duty.
(4) Artillery liaison officer provided by artillery headquarters.
(5) Engineer officer normally commanding officer of attached engineer company, or liaison party from engineer battalion.
(6) Division artillery headquarters and headquarters battery will be located as designated by division artillery commander.
(7) Chaplain sections normally are located with rear echelons, although they work forward.
(8) Division ordnance officer will be located with the headquarters company of the ordnance battalion.
(9) Division quartermaster will be located with the headquarters company of the quartermaster supply battalion.
(10) Division administrative center created on orders of commanding general only.

Division of the headquarters into echelons in no way solves the entire problem for the operation of the headquarters. To operate effectively, certain plans and a standing method of operation are advisable. Staff actions and procedures as applied to the tactical situation are the responsibility of the chief of staff or executive officer; however, the many details which tend to improve the operations of the command post must be specifically delegated to another officer. The appointment of the headquarters commandant should be given careful consideration by the commander and the chief of staff, due to the important duties he will perform. In discussing the duties of the headquarters commandant, only the division level will be considered, as subordinate headquarters can follow the procedures with modifications.

The establishment of the command post, its arrangement, and its security are all designated as duties of the headquarters commandant. Specifically, in armor the headquarters commandant must accomplish the following: local security of the command post, interior and exterior arrangement of staff sections, billeting and feeding all personnel to include liaison and visiting personnel, reconnaissance of new command post locations as designated by the commander or chief of staff, and the posting of competent guides at critical points approaching the command post. Taking the responsibilities in order, local security is maintained by the employment of all personnel of the headquarters. The headquarters commandant must devise a plan based on the situation and place it in effect immediately upon establishment of the command post. The chief of staff must be informed of the measures taken for local security as soon as the plan goes into effect. The cooperation of all staff section heads is expected in maintaining local security and in supplementing the defense platoon of the headquarters. At times, combat troops may be assigned or attached to division headquarters to strengthen local security. When such troops are assigned to the command post, the headquarters commandant is responsible for their integration in the overall plan of security. If the command post is kept well forward it will derive much of its security from the presence of the combat elements, and only on rare occasions will it be necessary to bolster the available security. Regardless of the situation, local security will always be maintained at the command post. Because the command post operates twenty-four hours a day, sound judgment must be exercised by the headquarters commandant in the amount of security needed for a particular situation. Rest for personnel must be considered, or a resultant lowering of operating efficiency becomes apparent. Plans must be made and disseminated to all command post personnel as to employment in case of air or ground attack; these plans must consider the moving command post as well as the established position. Command posts may be established in woods, fields, towns, and cities; and each will present its own particular problems. However, there are some standing procedures which should be considered in the arrangements. The message center should be located near the entrance to the command post so that messengers, who in the majority of cases will be mounted, need not enter the position of the staff sections. The division message center is of sufficient size for an intramessenger service to be established between staff sections. The commanding general and chief of staff should be located centrally with respect to the staff sections. The operations and intelligence sections are located in close proximity to each other: likewise, the personnel and logistics sections are near one another. A visitors' motor park must be established with a dismount point in close proximity to the headquarters commandant section, which is located close to the entrance of the command post. The visitors' motor park and dismount point must have an established means of communication to bring the vehicles to the dismount point when the visit is concluded. Those special staff sections which are found with the command post during combat operations should be located close to the general staff section with which they normally function.

At the division headquarters a war room will be maintained. On the war room maps, various staff sections will post information of value to the commander; and this information will cover the entire army front. Another use of the war room will be to hold such staff meetings and briefings as are necessary. The war room of subordinate units within the division will be where the unit situation and operation maps are located.

Prior reconnaissance of the proposed location of the command post must be made so that continual effective operation is possible. The headquarters commandant, in making the reconnaissance of a proposed location, should take sufficient guides and members of staff sections with him to insure a minimum loss of time when the command post is established. While the reconnaissance of the new location is being made, oftentimes the command post will be en route. The final selection of any command post location will be made by the chief of staff, executive, or by the commander, with due consideration to communication facilities.

In order to facilitate movement from one location to another, it is best to establish a standing order of march for the command post. A suggested order of march for the forward echelon, armored division headquarters, is as follows:

> Security; Chief of staff section; G-2 section (-); G-3 section; Air section; Message center and signal officer; G-4 section (-); G-1 section (-); G-5 (when provided by T/O or when attached); Liaison officers; Engineer officer; Chemical corps section (-); Surgeon section (-); Balance of G-2 section; Public information section; Division signal company (-); Division headquarters company (-).

This standing order of march assists the headquarters commandant in establishing the command post in a new location and also facilitates rapid displacement. Feeding and billeting will always present problems to the command post. Plans and arrangements must be made by the headquarters commandant for feeding and billeting of liaison officers, visitors, and observers. It is not uncommon in armor to have liaison personnel attached and detached frequently as the task organization changes. Such changes should be considered commonplace, and measures should be taken to meet them. Improper feeding and billeting discourage liaison officers, visitors, and observers although they are an accepted and vital part of the headquarters.

Those of you who have spent half a night attempting to locate a unit's command post will appreciate the value of competent guides to such installations. The armored unit is no exception to the fact that a command post, to operate as prescribed, must have guides placed at critical points on the exterior, and a directory furnished at the dismount point as to the location of the staff sections. During hours of darkness, illuminated command post signs should be available but must be used in a manner that is consistent with security. Many hours of valuable time have been lost because of an incompetent guide system, time which could have been spent in planning and coordinating an operation. The headquarters commandant must be aware of the necessity of a guide system, and he should have inspections at periodic intervals to see that the guides are functioning properly.

There were many instances where operation orders were issued verbally to the assembled commanders or to their respective liaison officers. Prior to a particular operation the commanders of the combat units were generally assembled and given their instructions; however, after the operation was placed in effect it became increasingly difficult to assemble commanders for further instructions without loss of time. The liaison officer of the unit in many cases was carrying instructions to this commander which, if not properly presented, could affect the whole operation. Many commanders prior to entering combat operations failed to pay particular attention to the selection of liaison personnel, or to their training. As a result, liaison officers in many cases were saddled with many additional duties deviating from their primary duty. In selecting personnel to act as liaison officers, commanders must consider that good liaison officers will make it unnecessary to assemble subordinate commanders during combat to issue new instructions. The liaison officer of the armored units must possess qualifications which are, if possible, better than average. The duties of liaison personnel are set forth in FM 101-5 and will not be discussed here; their training should be continuous, along with the balance of the unit. In the present organization of the armored division, liaison officers are provided for in the G-3 section. This tends to departmentalize liaison officers. It is felt that liaison personnel belong to no particular staff section; to achieve their maximum use and effectiveness during combat operations they must be coordinated and supervised by the chief of staff. By placing the liaison functions under the chief of staff you can assure the conveyance of all tactical and administrative information to the subordinate unit.

As the type of armored unit is improved and as warfare changes, changes in the operation of command posts will be mandatory. The armored division, being a unit of combined arms, requires a superior operating headquarters to coordinate and control the effort effectively. Details, such as records, reports, and other staff procedures which go to make up the headquarters operations have not been discussed because they are reasonably standard in all cases. It is not the intention of the writer that this article be construed to present the only manner in which the various functions could be performed, but rather to project a method of operation in more detail than presently available. New methods of headquarters operation should be encouraged and tried; if effective they should be adopted. Only then will progress be made toward obtaining a unit that is second to none.

* * * *

The Armored Cavalry Journal
BOOK SECTION

THE SUPREME COMMANDER'S STORY OF A GREAT CONFLICT

CRUSADE IN EUROPE, A Personal Account of World War II, by General of the Army Dwight D. Eisenhower. Doubleday & Company, Inc., 559 pps. $5.00.

A Review by
Harry C. Butcher, Captain, U.S.N.R.

As might be expected of an aide who greatly admired and respected his general, I shall immediately recommend that anyone who is interested in The Armored Cavalry Journal will want General Ike's book in his library. I suspect, too, that many ordinary civilians who were in uniform likewise will cherish its possession. The book is, I warn you, not so much a personal story as it is a military history—perhaps personalized-history would fit it better. You won't find it quick reading; I needed two weeks of reading, as opportunity permitted, to write this sketchy review. It is the kind of a history you can keep by your bed and take in easy doses.

"CRUSADE IN EUROPE" starts with a brief personal account of the then Major Eisenhower's activities and beliefs while he was still serving in the Philippines in 1939. (He believed that U. S. participation in the war was inevitable.) There he had had four years of service as senior military assistant to General MacArthur. The book ends in the postwar period when General Ike was confronted with the changing attitude of the Russians toward the Western world. (Ours was changing too.) In between, General Ike covers almost every conceivable controversial military and some political questions which confronted him and his men and women in uniform in the E.T.O.

In passing I would like to express the hope that someone in the Pacific theater, preferably General MacArthur himself, will present a book paralleling General Ike's so, if for no other purpose, those of us who served in the E.T.O. can get a similarly clarifying and consecutive story of what happened in the Pacific. There have been numerous books, many of them good, written at various levels of opportunity to know, on affairs in Europe, but we have yet to see a comprehensive story, unbiased by any particular service interest, on the Pacific part of the war.

However, General Ike quite thoroughly recounts the military reasons for giving the European theater first priority as against the Pacific. This decision had been reached before the general was called to Washington, soon after the Pearl Harbor debacle, where he was to become Chief of the Operations Division under General Marshall. This division he describes as the Command Post of the Chief of Staff. General Ike devotes what is, to me, an entrancing chapter to this Command Post. In this you will find the story of the darkest hours of the war for the United States, yet in those black days and nights there was taking form in OPD the story of basic planning, the reasons behind decisions, and the decisions themselves, which were to give us eventual victory. General Ike and his OPD associates became advocates of the cross-channel invasion into France. He was supported by General Marshall, Admiral King and General Arnold, and, in due course, by the American government. The British, as persuasively and courageously represented by Prime Minister Churchill, in time also approved this plan, but the plan frequently was exposed to the doubts of Churchill, whose military thinking often appeared to be influenced by the major political considerations looking for postwar influence in Europe.

In the spring of 1942, General Marshall sent General Eisenhower to England to survey the general military situation. General Ike took with him General Mark Clark who was then Chief of Staff of the ground forces. On their return General Ike was asked to recommend an officer to command in the European theater. He recommended General Joseph McNarney because McNarney had served in blitzed London, knew the workings of the British service departments, and believed in the air force's ability eventually to make possible the ground invasion of France. General Ike presented to the Chief of Staff a proposed directive for the European commander and was told by General Marshall, "I certainly do want to read it. You may be the man who executes it. If that's the case when can you leave?" With his associates, particularly General Mark Clark, he was soon immersed in welding together the first of his Allied commands.

At no place in the book did I discover any deviation from the strong beliefs in Allied cooperation which he expressed and practiced during the war. The book is an invaluable military history and, in making a permanent record of his reasons behind decisions and, particularly, his arguments with his friend Churchill and others, he has not perceptibly altered for history his beliefs and views of events and persons as I heard him express them. This, I

Harry C. Butcher entered upon active duty as a Naval Reservist in early 1942, suspending a busy career in radio which included the establishment of the Washington Office of the Columbia Broadcasting System in 1929, the managership of WJSV, and an eight-year period as Vice President in Charge of CBS for the Nation's Capitol. In mid-June of 1942 he was assigned as Naval Aide to General Eisenhower. Author of the book "My Three Years With Eisenhower," Mr. Butcher is now owner and operator of Radio Station KIST, Santa Barbara, California.

think is a good measure of the integrity of any man and although no confirmation of this quality in him is needed, I am gratified to see its proof in his finished work.

General Ike tells of various reasons for our temporary setback at the Kasserine. He doesn't blame, as some did, the lack of "blooding" of the men but more particularly the lack of experience of the officers. Even this he explains by showing that many of the officers had only dummy equipment for training because of our weakness in matériel flowing from our years of almost pacifism. He tells the reasons for going into Sicily and Italy. He devotes many pages to the earnest discussions which finally resulted in the firm decision to make the cross-channel attack into France.

His problems with General Patton, whom he loved but nevertheless competently analyzes, are likewise thoroughly recorded. The Supreme Commander also had problems with Field Marshal Montgomery but General Ike graciously lets the Earl of El Alamein explain, by "Monty's" own letter, his eccentricities:

> "Dear Ike:
>
> Now that we have all signed in Berlin I suppose we shall soon begin to run our own affairs. I would like, before this happens, to say what a privilege and an honor it has been to serve under you. I owe much to your wise guidance and kindly forbearance. I know my own faults very well and I do not suppose I am an easy subordinate; I like to go my own way.
>
> But you have kept me on the rails in difficult and stormy times, and have taught me much.
>
> For all this I am very grateful. And I thank you for all you have done for me.
>
> Your very devoted friend,
>
> MONTY."

General Ike assumes, for the benefit of historians, complete responsibility for the "Battle of the Bulge." He traces the reasons for the Ardennes breakout without apology but with conviction that the decisions of himself and General Bradley were correct in the circumstances.

In recent months, while the Berlin crisis has been at its height, many of us have heard the charge that the President, in deference to the Russians, personally directed General Ike's forces not to take Berlin. Actually, Churchill wanted it taken, but General Ike makes clear that the decision was his and was supported by his staff. The decision was made because bombed-out Berlin, by then, had but little military value and he was intent upon splitting and destroying the German forces quickly to conclude the war. He added strength to Montgomery's armies to the North of Germany to prevent Hitler's fanatical worshippers to retreat and hole up in Denmark or Norway. He likewise directed Patton, Devers and Patch to swing South to cut off a possible last-ditch stand of Hitler or his principal subordinates in the mountains around Berchtesgaden from where he suspected that, by radio orders to outlying Nazi forces to fight unto death, Hitler or his deputies might prolong the conflict in isolated strong points in the manner in which they kept fighting long after they were by-passed at St. Nazaire and Dunkirk. The war might be regarded as over, and certainly would be celebrated at home as finished, yet we still would be fighting to eliminate any such remaining pockets. General Ike had a horror of casualty lists continuing to appear in the home press after the war was thought to be over.

General Eisenhower recounts some of his conversations with President Truman at the time of the Potsdam Conference. He expressed his misgivings to the President about pressing the Russians into the war against the Japanese when it was obvious that the days of the Jap were numbered. His dealings with the Russian Marshal Zhukov were personal and friendly, but when disagreements developed between Motolov and the then Secretary of State Byrnes, there was a noticeable cooling of friendship. In fact, there developed almost instantly, on orders from Moscow, an open showing of animosity in the daily contacts of Russian officers and men in Berlin. Elsewhere in his book General Ike mentions that he had advocated the continuance of an Allied command for occupation of Germany with as rapid as possible transition from military to civilian control under the direction of the State Department, and he foresaw some of the problems which later arose because of the arbitrary partitioning of Germany, and particularly of Berlin.

Those Republicans and Democrats who sought General Ike as their respective presidential candidate probably would not have been so persistent had they realized that General Ike had made up his mind months before. (Including me!) While riding with President Truman at the Potsdam Conference, General Ike had said that he had no postwar ambition except to retire to a quiet home and there do what little he could to help our people understand some of the great changes the war had brought to the world. As General Ike puts it in his book, the President replied, "General, there is nothing that you may want that I won't try to help you get. That definitely and specifically includes the Presidency in 1948." To this astounding suggestion General Ike quotes himself as replying, "Mr. President, I don't know who will be your opponent for the Presidency but it will not be I." Then he adds "there was no doubt about my seriousness." The word "my" is in italics.

Signal Corps

The Supreme Commander and his Naval Aide.

The book has excellent war maps which will particularly interest those who were in one or more of the campaigns. It is so completely annotated that there are twenty-nine pages of footnotes at the back.* He gives also in the ap-

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(*Personally I'm an asterick lover and I like my footnotes at the bottom of the page, and I like my footnotes to tell me something more informative than mere reference to some buried document.)

(Continued on page 60)

Ideologies, The Curtain, Dialectical Materialism, East & West

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The Supreme Commander's Story

(Continued from page 59)

pendices, the Allied order of battle for the final offensive and a chart of the Allied air-ground team for the final offensive. The appendices also contain a description of the German ground forces. He gives a comprehensive glossary of the military code names of the major operations under his command.

There is a wealth of observation on the qualities that make an officer fail or succeed in command. These pointers, not preachments, should make the book a "must" to every young officer. And, as one who saw a wide variation of ability and attitude of officers, young and old, in dealing with news reporters, I especially commend General Eisenhower's comment on public relations. In the E.T.O., he was the most popular American general with the press and radio representatives. On this persistently perplexing relationship in wartime he makes, amongst others bearing on the subject, the following significant comment:

> "Complete wartime co-ordination and perfect co-operation can never be achieved between the press and military authorities. For the commander secrecy is a defensive weapon; to the press it is anathema. The task is to develop a procedure that takes into account an understanding of both viewpoints.
>
> "The press is primarily and properly concerned with providing information to the public at home. Civilian effort produces the fighting formations and the equipment necessary to achieve victory. Civilians are entitled to know everything about the war that need not remain secret through the overriding requirement of military security. Indeed, the commander in the field must never forget that it is his duty to co-operate with the heads of his government in the task of maintaining a civilian morale that will be equal to every purpose."

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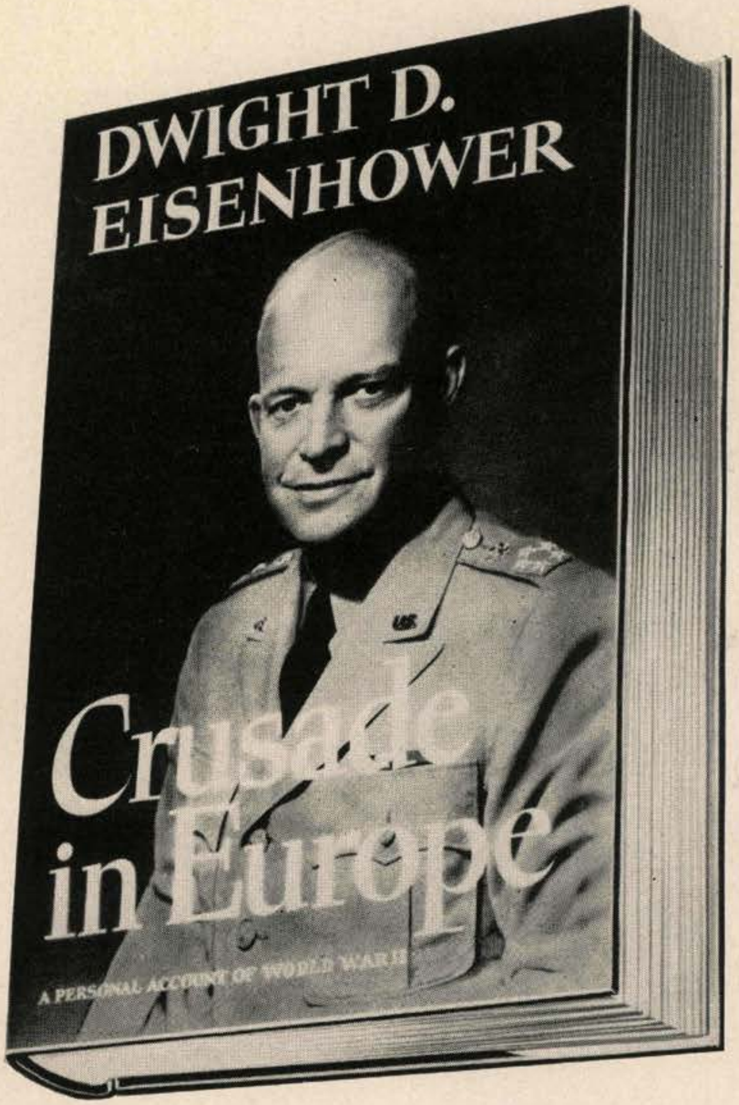
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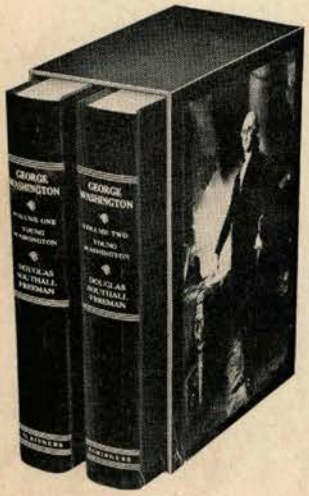

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